VOL. LXXXIV PART SIX

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

JUNE 1959

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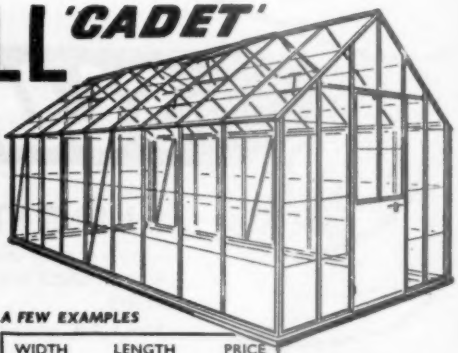

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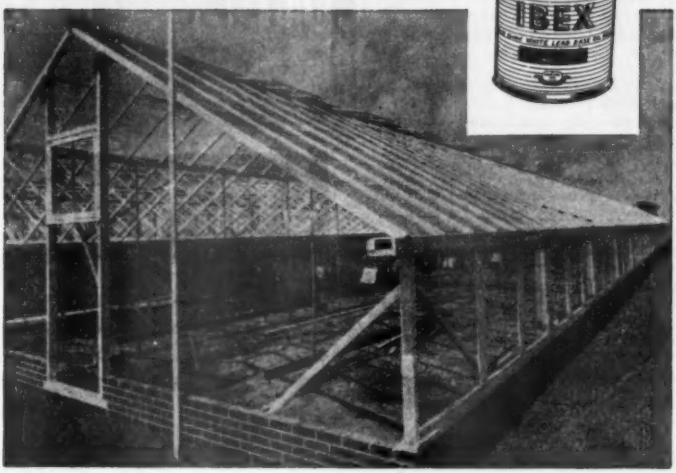

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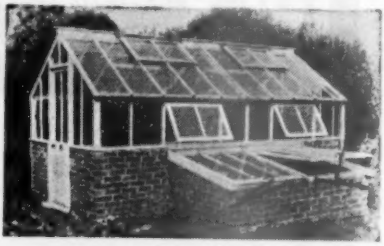

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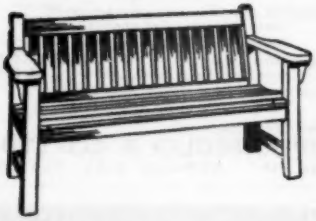

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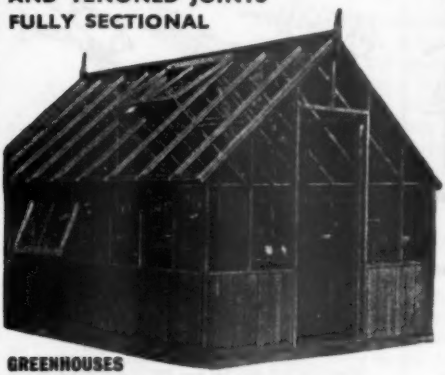

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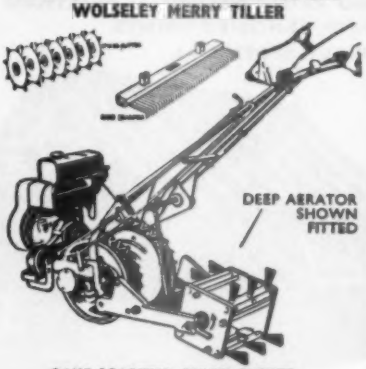

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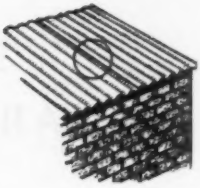

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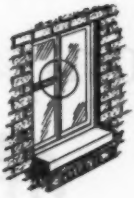

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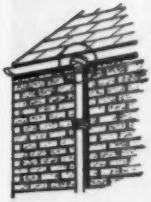

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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

VOL. LXXXIV PART SIX

June 1959

THE SECRETARY'S PAGE

ANNOUNCEMENTS—JUNE AND JULY

Shows

TUESDAY, June 9 12 NOON to 6 P.M. WEDNESDAY, June 10 10 A.M. to 5 P.M.	Fortnightly Flower Show, Flowering Tree and Shrub Competition, British National Carnation Society's Competition, Cactus and Succulent Society's Competition and Geranium Society's Competition, in the New Hall. British Iris Society's Show, in the Old Hall.
TUESDAY, June 23 12 NOON to 6 P.M. WEDNESDAY, June 24 10 A.M. to 5 P.M.	Fortnightly Flower Show and Cactus and Succulent Competition for Amateurs (Sherman Hoyt Trophy), in the New Hall.
FRIDAY, June 26 11 A.M. to 7 P.M. SATURDAY, June 27 10 A.M. to 5 P.M.	National Rose Society's Show (both Halls on June 26, New Hall only on June 27).
TUESDAY, June 30 12 NOON to 7 P.M.	National Sweet Pea Society's Show, in the New Hall.
TUESDAY, June 30 12 NOON to 6 P.M. WEDNESDAY, July 1 10 A.M. to 5 P.M.	Delphinium Society's Show, in the Old Hall.

Shows—*continued*

TUESDAY, July 7 12 NOON to 6 P.M. WEDNESDAY, July 8 10 A.M. to 5 P.M.	Fortnightly Flower Show and Fruit and Vegetable Competition, in the New Hall.
TUESDAY, July 14 12 NOON to 6 P.M. WEDNESDAY, July 15 10 A.M. to 5 P.M.	National Association of Flower Arrangement Societies' Festival of Floral Decoration, in both Halls.
FRIDAY, July 17 12 NOON to 7 P.M. SATURDAY, July 18 10 A.M. to 5 P.M.	British National Carnation Society's Show, in the Old Hall.
TUESDAY, July 21 12 NOON to 6 P.M. WEDNESDAY, July 22 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall.

Lectures

TUESDAY, June 9, at 3 P.M. "Damage by Birds to Horticultural Crops", by MR. E. N. WRIGHT, B.SC.

TUESDAY, June 23, at 3 P.M. "Meconopsis Species and Hybrids", by MR. A. EVANS.

TUESDAY, July 21, at 3 P.M. "Mixed Borders", by MR. C. LLOYD.

Lily Conference—A four-day Conference on Lilies, Fritillaries and Nomocharis will be held from Tuesday, July 7, to Friday, July 10. It is hoped that many Fellows and Associates will find it possible to attend and take part in the Discussions. A programme giving details of the arrangements for the lectures, visits to gardens, and the Conference Dinner may be obtained on application to the Secretary. Those who hope to attend on one or more days are asked to be good enough to notify the Secretary by Monday, June 15, or earlier if possible, so that adequate arrangements may be made.

Exhibits of Lilies—At the Fortnightly Show on July 7 and 8, the first two days of the Lily Conference, lilies will be a special feature, and the exhibits will include a co-operative display by members of the Lily Group. Members of the Lily Group are invited to bring or send lilies for this co-operative display, and SIR FREDERICK STERN, the Chairman of the Group, has kindly undertaken to supervise the staging. Any member who would like to supply flowers for this exhibit is asked to let the Secretary of the Lily Committee know, on or before the preceding Wednesday, the names of the lilies he proposes to supply and the number of stems, so that the necessary arrangements in regard to space, etc.,

may be made, and cards prepared showing the names of the lilies and the names of the exhibitors.

Demonstrations at Wisley—The following demonstrations will be given at Wisley, that on the succeeding day or days being in each case a repetition of that given on the first.

July 8–9. Summer Pruning of Fruit Trees. (Commencing at 2 P.M.)

July 15, 16, 17. Vegetative Propagation of Shrubs and Herbaceous Plants. (Commencing at 2 P.M.)

Gardeners' Sunday—This year many gardens will be opened to the public on two Sundays, viz. May 3 and June 28, in aid of the Gardeners' Royal Benevolent Institution and the Royal Gardeners' Orphan Fund, and some gardens will be open on other days.

The Gardeners' Royal Benevolent Institution urgently needs funds to maintain and endow its residential country home for old gardeners and their wives and widows, as well as for its work of providing pensions and grants for retired gardeners living in distressed circumstances in their own homes. The Royal Gardeners' Orphan Fund provides allowances for the fatherless children of gardeners and its assured funds are insufficient for the purpose. It is hoped that many Fellows and their friends will support these gardening charities by visiting gardens opened under this scheme.

A booklet containing details of some 500 openings may be obtained from The Organiser, Gardeners' Sunday, Four Winds, Seale, Farnham, Surrey, price 1*s*., post free.

Publications

"Rock Gardens", by E. B. ANDERSON, late President of the Alpine Garden Society, has now been published in the Series of illustrated handbooks produced in collaboration with Penguin Books Ltd. The price is 5*s*., postage and packing 9*d*., and not 6*s*. as originally announced.

Indices to the Journal and Lists of Awards—The price of the two Supplements to the original Index, covering the periods 1935–1945 and 1946–1955 respectively, has been reduced to 12*s*. 6*d*. each, postage and packing 1*s*. 9*d*. These Indices are invaluable for reference to the JOURNAL and also to exhibitors of plants for Awards. These publications are obtainable from The Secretary, The Royal Horticultural Society, Vincent Square, London, S.W.1.

Preventing Spray Drift Damage to Crops—Farmers, contractors and other users of selective weed-killers are reminded that costly damage can result from the drift of sprays containing compounds such as MCPA and 2,4-D on to susceptible crops. Users are urged to do everything possible to avoid spray drift during the coming season. Horticultural crops and sugar beet are specially vulnerable and extra care should be taken in the neighbourhood of glasshouses. Risks of damage can be reduced or avoided by a few simple precautions. The most important thing is to avoid spraying during windy weather, when

the fine droplets of spray may be carried considerable distances and damage susceptible crops. Keeping the spraybar low helps; and high volume sprays at low pressure produce larger droplets that are less liable to drift.

Full advice and information is given in the Ministry of Agriculture's leaflet, "Spray Drift Damage to Crops", obtainable free from the Ministry's local offices or from the Ministry (Publications), 23 Soho Square, London, W.1.

INVITED TRIAL

The Royal Horticultural Society will carry out at its Gardens the following trial, for which entries are now invited.

FLOWERS

Lavender, named varieties, for planting in the autumn of 1959 (6 plants of each variety, which have been propagated from cuttings taken in 1958).

Conditions for entry to the Trials

1. All entries must be made on the appropriate form obtainable from The Director, The Royal Horticultural Society's Gardens, Wisley, Ripley, Woking, Surrey. One form should be completed for each entry and entrants are asked to state the number of forms required when making application for entry forms.

2. The entrant must certify on the form either:

(*a*) that the variety has been raised or developed by him

or (*b*) that the variety was, or is about to be, introduced by him to British commerce.

3. Entry forms must be completed and returned to Wisley not later than August 31, 1959. Entries received after that date cannot be considered for inclusion in the trial.

4. Plants *should not be sent* until the entrant receives notification that his entry has been accepted.

5. In the event of too many entries being submitted for a particular trial, the Council of The Royal Horticultural Society reserves the right to scale down the number of entries received.

NOTES FROM WISLEY

N. K. Gould

An article dealing with the Wisley Gardens at this time of the year can only be fittingly begun by mention of the rose collection. Neither the soil nor the climate of Wisley is ideally suited to the growing of roses, but by proper treatment of the soil it is possible to maintain a very large collection, covering all types. Those who have but recently taken up gardening as a hobby may understandably be puzzled by the rather elaborate system of classification of the modern varieties, but this should not deter them from planting any which they admire; and information as to the treatment, such as pruning, of the varieties, belonging to any particular section, is easily to be obtained, either by enquiry of the garden staff at Wisley or attendance at the seasonal demonstrations.

In the pair of long borders running from the Floral Trial Grounds to the top of Weather Hill there will be found examples, both old and new, of Hybrid Teas, Hybrid Perpetuals, climbers of several types and the fashionable small-flowered bedding varieties. The labels indicate the class to which any particular variety belongs. The range of colours is so extensive nowadays that it is not easy to determine what would be most suitable for a particular purpose. This is, of course, a matter of individual preference, and the only comment we make is that certain of the brilliant pillar-box red shades and some of the rather sombre heliotrope tints, although exciting and attractive when seen for the first time, can become rather wearying if planted in large beds in a small garden and seen daily during the whole season.

In other parts of the Gardens there are to be found many other types of roses. Just inside the Main Gate, on the south wall of the Laboratory, there is an old plant of the climber 'Belle Portugaise', otherwise known as 'Belle of Portugal', which is almost the first to flower, putting out at the end of May large nodding flesh-pink flowers of great beauty. Roses of this type are not very widely planted at the present time and perhaps their greatest failing is that their season is a short one. Within a few yards of this plant there is an equally large specimen of 'Mermaid', a hybrid of the rather rare species *R. bracteata*. 'Mermaid' has handsome, almost evergreen foliage, and is constantly in flower from June until late autumn and cannot be too highly recommended for a warm wall. The choice of a climbing rose needs very careful consideration, especially if it is required to cover a relatively small space. This point is best illustrated, perhaps, by a specimen of *Rosa filipes* which, growing near the cottage at the top end of the terrace, has made its way to the very top of a tall holly, whence it projects long pendent branches wreathed for the whole of their length with great panicles of single white flowers. Only in such a position can such a rose be seen in its fullest development.

Likewise, at the west end of Seven Acres, there is a very old plant of a double pink form of *Rosa multiflora*, almost certainly grown from seed collected by either WILSON or FORREST. This rose has attached itself to a large birch, among the branches of which it forms a curtain of blossom at midsummer.

In the last few years many of the older types of hybrid roses, which might easily have been lost to cultivation, have been saved for us and restored to a considerable measure of popularity, by a few enthusiasts. These are collectively known as "Shrub Roses". It is sometimes said that they lack the long flowering season of the modern hybrids, but this is not true of all of them and, in any case, those which have a short season of flowering are well worth the space they occupy when they are in full flower. Most of them have distinctive fragrance and form, and many of them have colours not to be found in the modern hybrid. Two beds of these old "Shrub Roses" are planted near the frame yard wall, and well repay close inspection when they are in flower.

At this time of the year herbaceous perennials and annuals are coming into prominence and there are several large collections and trials which should on no account be overlooked. Near the east end of the terrace the sweet peas occupy the same site as last year. Plants raised from autumn seeds were put out at the beginning of April and, at the time these notes were written, looked very healthy and promising. Last year, despite the continued wet weather, the plants made remarkable growth and continued in flower for three months. This year there are no fewer than seventy different stocks. All of these will be grown under numbers as they are new and unnamed varieties, but as has been the case in previous years, a full report of the trial will be published in the JOURNAL in due course.

Delphiniums are represented by about eighty-five different groups and in this collection there will almost certainly be some novel and striking forms. In the last few years there have been some interesting new colour developments, inclining towards pink and heliotrope. Then there are herbaceous paeonies of many colours, probably most of them derived from the Chinese *Paeonia lactiflora*. These are extremely valuable garden plants, improving year after year with the minimum of attention, requiring as a rule no staking, flowering profusely in the early summer and many of them showing attractive autumn foliage colouring.

Near the frame yard wall there are the varieties of garden pinks, over seventy in number, and other trials in progress include those of *Heuchera*, *Pyrethrum* and *Dimorphotheca*.

Finally, there is the collection of tall bearded irises, numbering about two hundred varieties, representing the best of the modern introductions. Some very outstanding and splendid varieties were given awards last year and many visitors will recall the wonderful show they made. The writer of these notes, and doubtless many readers, will remember how different were the varieties of the early years of the present century. In most gardens at that time the common purple flag,

Iris germanica, was to be seen flowering, sometimes as early as April, and putting up with almost any conditions. Along with it there might at that time have been the frail looking greyish-white *I. florentina*, or one or other of the lavender- or mauve-coloured varieties of *I. pallida*. These were doubtless the descendants of collected European species; and a plant usually known as *I. squalens*, believed to be a natural hybrid between *I. pallida* and a little yellow and purple flowered species *I. variegata*, not infrequently appeared with them. Some of these linger on in old gardens but they would generally be considered of little consequence at the present time.

In the years that followed great numbers of new hybrids were raised, the size and colour of the flowers being greatly improved and the stature of the plant, in many cases, increased. Extensive trials were conducted at Wisley and the increased importance of irises is reflected in the report of the trial of 1925–7, which occupied forty-five pages of the JOURNAL and took into account well over one thousand varieties. To have maintained such an unwieldy collection indefinitely would have been impossible; only the best could be kept, and it would be difficult to obtain most of these old varieties today. It would, however, be of interest to see again some which, in their day, were sensational; for example, 'Lord of June', with tall zig-zag stems and floppy lavender flowers; 'Dominion', which had a velvety blue and violet flower on too squat a stem, and a trio of later F.C.C. varieties; 'Maisie Lowe', with large, well-proportioned blue and violet flowers; 'Deputé Nomblot', in a dusky purple, shaded with golden brown, and 'Golden Hind', the first of a series of great golden-yellow, orange-bearded, varieties.

In other parts of the Gardens there will be plenty of interesting plants to see during June. In the Wild Garden for example, *Lilium rubellum*, an early pink-flowered species, will be at its best and there will be primulas, magnolias, stewartias, and *Kalmia latifolia*, of which Wisley possesses some uncommonly large and fine specimens. In the herbaceous borders one might expect to find varieties of *Anchusa* and some outstanding plants such as *Salvia haematodes*, *Lychnis chalcedonica* and *Clematis recta*. The Rock Garden and Alpine House are particularly colourful now, and among the attractions in this area we may note the species of *Saxifraga*, *Dianthus*, *Campanula* and *Phlox*, as well as some prominent groups of *Incarvillea delavayi*, *Roscoea humeana* and *Ourisia macrophylla*.

ROYAL BOTANIC GARDENS, KEW

W. B. Turrill, O.B.E., D.Sc., F.R.S., F.L.S., V.M.H.

(*Lecture given on February* 10, 1954, SIR ERIC SAVILL, K.C.V.O., C.B.E., M.C., V.M.H., *in the Chair*)

THE bicentenary of the foundation of the Royal Botanic Gardens, Kew, is to be celebrated in June of this year and no doubt with this in mind the President and Council of The Royal Horticultural Society have honoured me by asking me to give an outline of the history, development, and present functions of Kew. It is appropriate that such an account should be given for the relations between The Royal Horticultural Society and Kew have for a very long time been intimate, most friendly, and reciprocally helpful. That I am the best choice for the task is debatable, but I suppose my chief qualifications are my connections of over fifty years with Kew, that I have recently written a book dealing with the past and present of the institution, and that by serving on various R.H.S. committees and editing the *Botanical Magazine* for the Society I have learned greatly to value my associations with Vincent Square and Wisley.

The earliest record of a botanic garden at Kew is a vague one. The REV. WILLIAM TURNER (died 1568), a prominent and controversial divine, has been called, "the Father of English Botany", especially on account of his *Herbal* (1551–68). One reference has been traced to his garden at Kew but the site and other details of this are unknown. In the middle of the seventeenth century Kew House (or White House) belonged to a RICHARD BENNETT and descended to SIR HENRY (afterwards LORD) CAPEL by his marriage with RICHARD BENNETT's daughter, who died in 1721. SIR HENRY CAPEL was a noted cultivator of plants, especially those of horticultural value, and his garden is mentioned several times in JOHN EVELYN's *Diary*, with references to greenhouses, orangery, myrtetum, fruits, various shrubs, and so on. LORD CAPEL died in 1696, and his Kew property descended to a niece, LADY ELIZABETH CAPEL, who married MR. SAMUEL MOLYNEUX, a politician and secretary to the PRINCE OF WALES, afterwards GEORGE II. MR. MOLYNEUX died in 1728, and his widow in 1730, when FREDERICK LOUIS, PRINCE OF WALES, obtained a lease of Kew House from the CAPEL family and laid out the gardens afresh, with the advice of WILLIAM KENT (1684–1748), a celebrated artist, sculptor, and landscape gardener. FREDERICK married the PRINCESS AUGUSTA SAXE-GOTHA in 1736, daughter of the DUKE OF SAXE-GOTHA. The PRINCE died in 1751 and after his death his widow, now the DOWAGER PRINCESS OF WALES, continued to live at Kew, apparently at Kew House (White House). Till her death, in 1772, she took a great personal interest in her garden and, with the aid of JOHN STUART, THIRD EARL OF BUTE, and of the appointments made on his

advice, established in 1759 and speedily developed a botanic garden, the direct ancestor of the present Gardens. LORD BUTE had a considerable knowledge of botany, and one may well say that he was a better botanist than politician. The PRINCESS also employed SIR WILLIAM CHAMBERS, a noted architect, to embellish the gardens at Kew, especially the pleasure gardens, which extended far beyond the botanic garden of about 9 acres. Some of the buildings erected by CHAMBERS have disappeared, but there remain the Pagoda (Fig. 75), the Ruined Arch, the Orangery, and a number of "Temples".

From the botanical point of view the most important appointment was that of WILLIAM AITON (1731–93) as superintendent of the botanic garden, and eventually of all the royal gardens at Kew. WILLIAM AITON was born at Hamilton in Lanarkshire and had been employed in the Chelsea Physic Garden under PHILIP MILLER. In 1789 AITON published his *Hortus Kewensis* or a *Catalogue of the plants cultivated in the Royal Botanic Garden at Kew*. In this work, of three volumes, 5,500 species are named, described, and classified according to the Linnean system, with information concerning their native country and details of their introduction. The *Hortus Kewensis* gives evidence of the importance of the botanic garden at Kew and of the influence it had on the cultivation of plants in Britain. WILLIAM AITON was buried in St. Anne's Churchyard on Kew Green and was succeeded by his eldest son, WILLIAM TOWNSEND AITON (1766–1849), who did not retire from the position, of what we should now call Curator of the gardens at Kew, till 1841. He published a second edition of the *Hortus Kewensis* and, under increasingly difficult conditions, maintained the pleasure grounds and the botanic garden as royal property.

GEORGE III was king from 1760 to 1820 and lived at Kew as much as possible, where he delighted to play at being "Farmer George". He, QUEEN CHARLOTTE, and their family of fifteen sons and daughters, lived mainly in Kew House, or White House as it was variously called, and, later, in the Dutch House, now known as Kew Palace. The new Kew Palace, to the south-west of the Dutch House, overlooking the Thames towards Brentford, was built for GEORGE III and was "a mediaeval, fortress-like dwelling or castle, with numerous towers, turrets, and similar appurtenances". It was never inhabited, and was demolished by GEORGE IV in 1828. Besides the PRINCESS AUGUSTA'S botanic garden and the pleasure grounds of Kew House, GEORGE III inherited Richmond Lodge (also known as Ormonde Lodge), earlier a favourite residence of the PRINCE OF WALES, who became GEORGE II (grandfather of GEORGE III), and his wife, PRINCESS CAROLINE of Anspach. GEORGE III united the "gardens" of Kew and Richmond Lodge by obtaining, in 1765, powers from Parliament to close the very old right-of-way, from Richmond to Brentford Ferry, known as Love Lane, part of which is now the Holly Walk. It was this amalgamation of the "gardens" of Kew and Richmond (the latter in part) which is the historic basis of the name "Royal Botanic Gardens, Kew", that is, Gardens in the plural and not

Garden. Richmond Lodge was demolished in 1772 and the area of its kitchen and flower gardens was added to what is now the Old Deer Park.

After GEORGE III became king, he replaced the EARL OF BUTE by SIR JOSEPH BANKS as adviser on the botanical developments of Kew. BANKS planned to grow plants from all over the world at Kew and arranged for trained collectors to be sent to many parts of the globe, he bombarded ministers and government officials with letters of instruction, sometimes almost of command, and spent freely of his own time, money, and energy to this purpose. It is said that about seven thousand new plants from overseas were introduced into cultivation in British gardens in the reign of GEORGE III, most of them by the exertions of BANKS on behalf of Kew. Among the "Kew collectors" sent abroad during this period were FRANCIS MASSON (1741–1806) to South Africa, West Indies, and North America; DAVID NELSON (died 1789) to Australia, South Africa, and Timor; A. P. HOVE to India in 1787–9; PETER GOOD (died 1803) to India and Australia; GEORGE CALEY (died 1829) to Australia; WILLIAM KER (died 1841) to China; ALLAN CUNNINGHAM (1791–1839) to Brazil, South Africa, Australia, and New Zealand; JAMES BOWIE (died 1869) to Brazil and South Africa; and DAVID LOCKHART (died 1846) to the Congo. Another important contributor to Kew, through SIR JOSEPH BANKS, was ARCHIBALD MENZIES (1754–1842), who was surgeon and botanist to CAPTAIN VANCOUVER in his voyage of survey (1791–5), and sent plants from Australia, South America, and western North America. MENZIES introduced the monkey puzzle (*Araucaria araucana*) to Kew and was the discoverer of the redwood (*Sequoia sempervirens*) in California.

Both GEORGE III and SIR JOSEPH BANKS died in 1820 and Kew passed into a period of decline. That the Gardens did not die as a botanical institution was largely due to JOHN SMITH (1798–1888, and conveniently known as JOHN SMITH I), who was made W. T. AITON's chief assistant in 1826, and later became curator under SIR WILLIAM HOOKER. There was a good deal of discussion as to the future of the Gardens, and in January 1838 the Treasury appointed a committee "to inquire into the management etc. of the Royal Gardens". This committee consisted of DR. JOHN LINDLEY, MR. (later SIR) JOSEPH PAXTON, and a MR. WILSON, gardener to the Earl of Surrey. The resulting report was critical of the collections and greenhouses at Kew, though the report was itself criticized by JOHN SMITH in his Records. However, the Report urged the need for a well-managed, well-equipped botanic garden in this country, and it was presented to Parliament on May 12, 1840. The outcome was that the control of Kew was transferred from the Lord Steward to the Commissioners of Woods and Forests, that is, from being the personal property of the Crown to the Government. SIR WILLIAM JACKSON HOOKER, then Regius Professor of Botany in the University of Glasgow, was appointed Director in March 1841, when he was nearly 56.

When SIR WILLIAM became the first Director of Kew officially appointed by government, the garden area in his charge was only about 15 acres. He immediately started drastic improvements, having walls pulled down and greenhouses rebuilt. The Gardens and greenhouses were opened to the public and gifts of new plants were received from many sources. The Royal Horticultural Society generously arranged that seeds and plants received from their collectors abroad should be shared with Kew. The area of the Botanic Gardens was increased within a few years by the placing of the Pleasure Grounds under SIR WILLIAM's charge, and later the whole was opened to the public and had very nearly the present size, except for the Queen's Cottage Grounds and Cambridge Cottage Garden. SIR WILLIAM was in many ways a most remarkable man. He was a first-class botanist with a large amount of published work to his credit. He edited various scientific periodicals, some of which he founded. He was a great walker, able to cover 60 miles in a day, and was renowned as a lecturer and for his use of the blackboard in teaching. As an administrator he showed his exceptional abilities at Kew. It is fair to say that Kew as we know it today owes more to the genius of its first Director than to any other man. The Palm House was commenced in 1844, the first Museum of Economic Botany was opened to the public in 1848, the Herbarium and Library were established in 1853, the Lake was completed in 1861, and the Temperate House was finished in 1862, apart from later extensions. These are only a few of the items for which we are indebted to the abilities, tremendous energy, and capacity for hard work of SIR WILLIAM JACKSON HOOKER. He was still Director when he died on August 12, 1865, six weeks past his eightieth birthday.

SIR WILLIAM's only surviving son, JOSEPH DALTON HOOKER (Fig. 84), had been Assistant Director since 1855 and immediately succeeded his father as Director. J. D. HOOKER had been educated at Glasgow and had been Assistant Surgeon under JAMES CLARK ROSS in the famous *Erebus* and *Terror* expedition to the Southern Hemisphere. The massive volumes of the *Flora Antarctica*, *Flora Novae-Zelandiae*, and *Flora Tasmaniae* are a permanent memorial to his botanical abilities. Later he spent three years botanizing in India, mainly in the eastern Himalaya (Sikkim and eastern Nepal) and Assam. His *Himalayan Journals* is a noted book of travel and he retained his interest in Indian botany for the remainder of his life, as is witnessed by his *Flora of British India* and other publications, and by the fact that he was working on Indian balsams up to a few months before his death. It is not unfair to say that, if his father made Kew Gardens, JOSEPH HOOKER made Kew the world centre of botanical research, especially in systematic botany and phytogeography. His own contributions were enormous. Apart from the books just mentioned, he edited and largely contributed to the *Botanical Magazine* and the *Icones Plantarum*, and published many papers in other periodicals. The intimate connection with GEORGE BENTHAM, whose valuable herbarium and library were presented to Kew, led to

the collaboration of BENTHAM and HOOKER in the *Genera Plantarum*, still the great classic for the taxonomy of the seed-bearing plants.

In the Gardens during SIR JOSEPH'S directorship (he was knighted in 1877) there were important improvements and additions: the Pinetum was planted, the Rock Garden was created, some new walks and avenues were made, the Jodrell Laboratory was built (1876), a new wing for the Herbarium was completed in 1877, and the North Gallery was opened to the public in 1882. He retired from the directorship at the end of November 1885 and lived at Sunningdale, Berkshire, till his death on December 10, 1911. He was buried, with his father, in the family vault at St. Anne's churchyard, Kew Green.

SIR JOSEPH HOOKER was succeeded by his son-in-law, WILLIAM TURNER THISELTON DYER (knighted in 1899), who had been Assistant Director since 1875. As Director, DYER developed the various departments of work initiated by the HOOKERS. He devoted his energies mainly to Kew, avoiding outside commitments as far as possible. He was very keen on making the Royal Botanic Gardens the centre for information in botanical matters for the British Empire, especially for taxonomy and economic botany. He linked up Kew with botanical institutions in many parts of the world. Floras of South Africa and Tropical Africa were continued. A new wing was built to the Herbarium in 1902. The *Kew Bulletin of Miscellaneous Information*, later the *Kew Bulletin*, was commenced in 1887 and the great *Index Kewensis* was published in 1895 with supplements up to the present. The Temperate House was extended, the Alpine House was erected in 1887, a small house for filmy ferns was built in 1892, and one for pitcher plants in 1897. The woodlands around the Queen's Cottage were given to Kew in 1897 by QUEEN VICTORIA on the occasion of her Diamond Jubilee. A refreshment pavilion was erected and Cambridge Cottage and its walled garden were added to Kew. On April 1, 1903, the Royal Botanic Gardens, Kew, were transferred from the Office of Works to the Board of Agriculture and Fisheries (now the Ministry of Agriculture, Fisheries, and Food). THISELTON-DYER (the hyphen was assumed about 1891) resigned from the Directorship of Kew on December 15, 1905, and was succeeded by LIEUT.-COLONEL (afterwards SIR) DAVID PRAIN.

The scientific work of Kew progressed steadily under PRAIN, who did much to improve the status of members of his staff. He had the difficult task of running Kew during the First World War and in re-establishing working conditions when it finished. His Assistant Director, ARTHUR WILLIAM HILL, became Director on March 1, 1922. HILL travelled widely and increased overseas connections with Kew in various ways. The scientific staff was enlarged, a fine new wing was built for the Herbarium, the Rock Garden was enlarged, the North Gallery was restored, the Sherman Hoyt house for American succulents was erected, and the very pleasing steps near King William's Temple added to the attractiveness of the Gardens. SIR ARTHUR'S tragic death

on November 3, 1941, will be remembered by his many friends. For a short period SIR GEOFFREY EVANS administered Kew till EDWARD JAMES SALISBURY, then Quain Professor of Botany at University College, London, was appointed Director on September 1, 1943. SIR EDWARD (he was knighted in 1946) had to readjust Kew under financially "tight" conditions after the Second World War. While very little material damage was done in the Gardens by direct enemy action and none to the scientific collections, the reduction in staff and in money available, and the great reduction in the importation of new plants, as well as the dispersal to the country of considerable portions of the Herbarium and Library, meant that there was much leeway to be made up. Many of the glasshouses have had to be rebuilt or largely renovated, including the Palm House. There have been added a new Australian House (Fig. 77), a chalk garden, and a clematis wall. Research has been pressed forward especially in the Herbarium and Jodrell Laboratory. New overseas floras were initiated. SIR EDWARD retired on September 30, 1956, and DR. GEORGE TAYLOR, previously Keeper of the Department of Botany, British Museum (Natural History), is the present energetic Director.

As already mentioned Kew is now officially under the Ministry of Agriculture, Fisheries, and Food but the Director has a wide autonomy in all administrative matters. The present departments under the Director are the Herbarium and Library, the Museums of Economic Botany, the Jodrell Laboratory, and the Gardens. Essentially Kew is a botanical institution, not a horticultural one, but since both botany and horticulture are concerned with plants there is, one is pleased to say, no curtain of any kind between them; there are only differences of emphasis for immediate purposes. If one defines botany as the science of plant life one has to acknowledge a great many divisions of the subject, so many, in fact, that not all can be dealt with adequately at Kew. Partly for very practical reasons and partly for historical reasons, Kew has concentrated on systematic botany in the wide sense, on phytogeography, on economic botany, and on comparative plant anatomy. This is not to say that other branches have been entirely neglected.

Classification is basic to all botanical research. Unless a plant be properly determined any investigations concerned with it cannot be made of value to anyone else, indeed may be misleading. The need for herbaria and associated library by means of which plants can be accurately determined is thus evident. The Herbarium at Kew (Fig. 85) is the largest in the world, with over six million collectings, and the Library has over fifty-five thousand bound volumes besides separates and manuscripts. The Kew Herbarium is particularly rich in "types", that is, original specimens on which the name of a species, or other taxon, depends. There are also special collections of fruits, seeds, and material preserved in bottles with a spirit mixture. Special mention must also be made of the large collection of maps and the rich series of drawings, paintings, and photographs of plants. All these collections are

continuously being added to, but they are not merely stored as museum junk but are in constant use by members of the staff and visitors for purposes of taxonomic research. Apart from the Kew periodicals, the *Kew Bulletin* and the *Icones Plantarum*, and papers published in many outside botanical periodicals, many books have been and are being prepared and published at or from Kew. Such include many floras, works on plant geography, monographs, books on economic botany, taxonomy, ecology, genetics, plant anatomy, etc. Of special interest is the connection between Kew and *Curtis's Botanical Magazine*. This, the oldest botanical and one of the oldest scientific periodicals still continuing, first appeared in 1787. SIR WILLIAM HOOKER was editor when he became Director of Kew in 1841 and since that date the Magazine has been edited at Kew, by Directors or Keepers of the Herbarium and Library, in part after official retirement, with only minor breaks. From 1922 the copyright of the *Botanical Magazine* has been vested in The Royal Horticultural Society and the Society, through its Council, is responsible for its publication. It thus forms one of the many links between Kew and Vincent Square and one that is reciprocally valued.

Another important connection of Kew is with the Colonial Office. We have seen that SIR JOSEPH BANKS did much to establish at Kew plants from all over the world, but particularly from what are now parts of the British Commonwealth. After 1841, when Kew became a government institution, there was an increasing tendency to specialize on floras of these areas. Thus BENTHAM's *Flora Australiensis* and his *Flora Hongkongensis* were published and J. D. HOOKER's *Antarctic* floras and his *Flora of British India* show the same trend. Later there were the many volumed *Flora Capensis* and the *Flora of Tropical Africa*. In quite recent times modern floras of smaller areas have been prepared, or are in course of preparation at Kew, such as the *Flora of West Tropical Africa*, *Flora of Tropical East Africa*, *Flora of Cyprus*, *Flora of Iraq*, and *Flora Zambesiaca*, the last in collaboration with the British Museum (Natural History).

The curatorial and research work at the Herbarium is in charge of a Keeper and is subdivided on the double basis of taxonomic groups and floristic areas. Thus there are specialists on orchids, grasses, pteridophytes, bryophytes, fungi, and algae and on the geographical divisions of Europe and the Nearer East, Temperate Asia, Tropical Asia, Australasia, Tropical Africa, South Africa, and America. While a large proportion of new material comes from the Commonwealth areas, it has to be remembered that plant ranges take no notice of political boundaries as such, and that for monographic research and, indeed, also for the working out of a flora of a restricted area it is essential to have specimens from every part of the world. As a result, while Kew is in one sense a national institution, it is scientifically an international one of world-wide repute.

A service fulfilled by Kew that is very important, but about which little is usually said, is the provision of botanical materials to research

works in other institutions at home and abroad. Very frequently the Director is asked to supply plants, plant parts, or seeds for scientific investigation, not infrequently with the added remark that such cannot be procured elsewhere.

Economic botany still holds an important position at Kew. The part Kew played in the past in the introduction of rubber, cinchona, and other economic products to the East has been told many times. More recently, a quarantine house was established in the Gardens mainly for the purpose of receiving living plants of economic value from some country in the tropics, retaining them for a sufficient period under constant supervision and examination, sometimes propagating them, and, finally, if they be found to be free from pests and diseases, sending them to a new destination overseas. Particularly there has been activity along these lines for stocks of banana and cocoa between the Western and Eastern Hemisphere, but other crops have also been treated in the same way. Thus Para rubber varieties, ipecacuanha (for Malaya, Nigeria, and British Honduras), sultana grape-vine (from Cyprus for St. Helena), and cotton (from the Sudan and Uganda for Cyprus) have been distributed. Bananas have made a two-way traffic: plants from tropical Africa to Trinidad and cultivated varieties from the West Indies to Queensland, Ghana, and the Cameroons. Kew is favourably situated geographically, and for proximity to speedy sources of transport, to act as a quarantine station for the Commonwealth.

At the Jodrell Laboratory a great deal of time is now devoted to the study of plant anatomy, as a branch of synthetic taxonomy and as a subject in its own right. Solereder's *Anatomy of Dicotyledons* has been replaced by what is essentially a new work, and research on the anatomy of monocotyledons is in active progress. The very large number of plants grown at Kew, over 45,000 species not counting artificial hybrids and varieties, means that there is a wealth of material at hand for examination. Moreover, Kew is in close touch with botanical institutions, in the widest sense, in all parts of the world, so that specimens of exotics not represented in the living collections can often be obtained by well-recognized channels. In addition to research, there is a considerable amount of advisory work carried out by members of the Herbarium and Library, Museums, and Jodrell Laboratory staffs, through the Director. The specimens and questions submitted by correspondents to the Director are not only numerous, some 10,000 a year it has been stated, but are extremely varied in character. If charges were made on the basis of lawyers' fees, the resulting income would largely pay for the upkeep of Kew!

It seems fitting to conclude this very brief and selective account of the Royal Botanic Gardens, Kew, with some remarks concerning the Gardens as open to the public. The extensive grounds of nearly 300 acres are, with certain relatively small reasonable exceptions, free of access to visitors during the hours of opening from 10 a.m. to closing time (4 p.m. in midwinter, 8 p.m. in midsummer) daily, except on

Christmas Day. The greenhouses are open in the afternoons. Annual attendances, as accurately recorded by the turnstiles, average for recent years well over one million, the actual figures depending mainly on the spring and summer weather. The largest single-day number was on a Whit Monday, with over 78,000. On the whole, visitors behave remarkably well, doing little damage and leaving less litter than formerly. Occasional exceptions to Boy Scouts' standards occur but are not frequent. While it is no doubt true that a large proportion of the visitors come to Kew for "a day's outing" there are many who make the visit expressly for seeing objects of botanical interest. Such are students of plant life, school-children and adults, those actively engaged in some form of horticulture, and those wishing to increase their general knowledge. It is impossible to estimate the educational value of Kew in any precise way. Seeing and listening to visitors does, however, make one realize how wide is the appreciation of the beauty of form and colour as shown by flowers, fruits, and foliage and how sincere is the interest shown in what is familiar, what is new, and what is associated even remotely with personal experiences. Even the Latin names are enjoyed—after all to be able to attach Latin names to a number of plants can impress one's friends in the right circumstances, even if the latest Code of Nomenclature be sometimes ignored.

Perhaps more could be done to increase the general educative value of Kew. Suggestions have been made for guide-lectures, many more up-to-date descriptive labels, special exhibits, and definite arrangements in some of the departments to illustrate particular habitat conditions, distinctive floras, morphological peculiarities, problems of classification, and so on. While some of these suggestions may be found to be feasible in the future it must be acknowledged that the feeling of freedom is often expressed by visitors to Kew. Recreation is not spoiled by too many notices of the " don't walk on the grass " type and, apart from temporary restrictions imposed for usually obvious reasons, such as tree felling or turf renewal, there is open access to woods and lawns, the grounds of the Queen's Cottage and the Cumberland Gate Mound being the only large areas now reserved.

Kew is full of beauty and interest at any season of the year. Indeed, fully to appreciate the Gardens, they should be visited every week. Probably there would be general agreement that May and June are the "best" months for the display of flowers, coupled with long days, but many of the evergreens can be studied just as well in winter and the architecture of deciduous trees and shrubs is better appreciated when their leaves have fallen than when the foliage is fully developed. It may be hoped that the prominence being given to the bicentenary of the Royal Botanic Gardens, Kew, will increase interest in this great institution, whether as the world centre of botanical research or as a beautiful place where plants from all parts of the earth can be seen and appreciated by our numerous and welcome visitors.

SOME NOTES ON THE FLORA OF WESTERN AUSTRALIA

F. S. Banfield
S. Perth, Western Australia

MANY years before the settlement of Western Australia was formed the intrepid WILLIAM DAMPIER, who has been described as a buccaneer, explorer, pirate and author, visited Western Australia in 1699. He is, no doubt, better remembered by generations of gardeners for the part he played in the introduction of many plants, among which are at least two that bear his name, the lovely *Dampiera incana* and the equally attractive *Clianthus dampieri*.

SIR JOSEPH BANKS, who accompanied CAPTAIN COOK on his voyage to the South Seas, and who is still remembered as the "Father of Australia" was the next botanical visitor, and he is appropriately commemorated by the genus *Banksia*.

In his remarkable book, *The Voyage of the Beagle*, CHARLES DARWIN wrote that the wild flowers made a strong appeal to him and later there began a lengthy correspondence with residents of Western Australia during which he made a large collection of the flora.

Accounts of the botanical expeditions of early collectors usually provide interesting reading and the journeys of Australian collectors are no exception. We learn that the genus *Chorizema*, which derives its name from the Greek words meaning "dance" and "drink", is so called because the search party, when looking for C. A. G. RICHE, a French botanist, who lost his way while collecting, discovered *Chorizema ilicifolium* growing near a spring of fresh water. Being very thirsty after their long trek, they danced with joy at the place where the plant was found. Moreover, close by was a shrub we now know as *Leucopogon richei*, upon the fruits of which RICHE had eked out his scanty supply of food.

Interest in the flora of Western Australia was stimulated in the early days by the enthusiasm of visiting botanists and other collectors. In 1897, the Meuller Botanic Society was formed and was later absorbed by the Royal Society of Western Australia. The publications of these societies were the accepted scientific media for announcing the classification of new plants.

But news of this fascinating flora was spread by officials and visitors acquainted with its botanical interest and also by settlers who were impressed by the beauty and quaintness of so many of the flowers. Collections of plants which were sent to England evoked the interest of European botanists and the flora of Western Australia began to attract collectors to these shores.

This flora, which includes both temperate and tropical plants, is one of the world's richest, both in the wealth of colour and the diversity of

forms. To appreciate the true quality of the plants, however, they must be seen in their natural state. Nature has been lavish with her palette, bestowing the whole landscape with the most beautiful colours. The yellow of the wattles (acacias) predominates, splashed with the many blue and violet tones of the *Lechenaultia biloba*, *Lobelia tenuior*, *Dampieras* and *Hoveas*. In red tones the red-flowered gum (*Eucalyptus ficifolia*), *Verticordia grandis*, *Clianthus*, *Templetonias* and the intense scarlet flowers of *Lechenaultia formosa*. Pink and white flowers are intermixed with the warmer tones and help to make one of the most arresting spectacles.

During the recent flowering period I was fortunate to be able to renew acquaintance with many of these indescribably charming plants.

The Western Australian flora is noteworthy for the quaint appearance of some of its genera, which exhibit a striking contrast to their allies in other parts of the world. For instance, upon first acquaintance, few people would believe that the black boy or grass tree (*Xanthorrhoea preissii*) belonged to the same family as the lily. The kangaroo paw (*Anigosanthus* spp.) which, in addition to being the national flower of Western Australia, has most unique qualities and, strange as it may seem, is related to the daffodil. The flowers are borne in clusters at the top of reddish stems; they are bright metal-green, orange and red, and green and yellow to almost black. The unopened flower buds resemble the lower part of the hind leg of a kangaroo, hence the colloquial name. Both the flowers and stems are covered with thickly matted hairs. Most remarkable, perhaps, is the black kangaroo paw (*Macropidia fumosa*), in which the yellowish green flower buds are almost obscured by dense black hairs.

In the vicinity of the capital city, Perth, the Christmas tree (*Nuytsia floribunda*) is fast disappearing as the land is utilized for housing development, but the wanton destruction of this plant is prevented by appropriate legislation. Its masses of flaming orange flowers will be familiar to many travellers as they are conspicuous in the landscape from the port of Fremantle to Perth. Unfortunately, the propagation of this tree is extremely difficult, the usual method is by suckers from subterranean parasitic stems. Although innumerable seeds are produced, success has been achieved in raising seedlings only after exhaustive experiments, the method being to grow them in a pot containing couch grass. *N. floribunda* is a monotypic plant of considerable botanical interest and belongs to the mistletoe family.

Among the large number of plants with pea-shaped flowers, the desert or glory pea (*Clianthus* spp.) is one of the most distinctive. Its brilliant scarlet and dark purple blossoms are borne on somewhat hairy stems, forming a striking contrast with the silvery grey foliage. The *Chorizemas*, with holly-like leaves and conspicuous yellow and red flowers, are found in varied situations. *C. ilicifolium* inhabits gravelly and dry sandy places in several districts.

Both inland and near the coast several *Oxylobiums* flourish on the

limestone tracts. *O. capitatum* bears clusters of yellow pea-shaped flowers, suffused with red on slender evergreen stems. This is a dwarf species and there are others with orange and red flowers. Closely allied to the latter, the Parrot plant (*Templetonia retusa*) favours similar situations. It forms an elegant shrub with olive-like leaves and curiously shaped, dull scarlet flowers. Under cultivation it withstands severe pruning and makes an attractive subject for decoration purposes.

Hoveas, *Hardenbergias* and *Kennedyas* are widespread throughout this state. Their dark purple and blue to brilliant scarlet pea-shaped blossoms are truly magnificent. Of the first-mentioned genus, *Hovea trisperma* is a free-flowering plant which presents a lovely picture in spring when covered with its intense violet flowers. Two or three other species form quite large bushes.

Growing luxuriantly in the south-west, where it inhabits the "jarrah" forests, the native wistaria (*Hardenbergia comptoniana*) produces fascinating pendent racemes of violet-blue flowers. Its close ally, *Kennedya prostrata*, known locally as scarlet runner, is quite common. The bright scarlet flowers are set singly or in pairs on graceful, creeping stems. There is also a lovely companion in the black *Kennedya* (*K. nigricans*), but it is less common. Its flowers are of a delightful deep violet-purple, enlivened with a yellow blotch in the centre. Other noteworthy species seen were *K. coccinea*, which bears scarlet flowers, and *K. rubicunda* with dark velvet red flowers.

Several species of mountain bell (*Darwinia*), which commemorate the name of CHARLES DARWIN, are native to Western Australia. They are small to medium size shrubs with erect stems which terminate in bell-shaped bracts; the latter vary from green to white and are red-tipped. These attractive plants belong to the family *Myrtaceae*, which is widely represented throughout the country. The Swan River myrtle (*Hypocalymma robustum*) is an attractive shrub which is found in clumps from the coast inland. It bears innumerable spikes of delicate pink flowers.

The wax-flower (*Chamaelaucium uncinatum*) is one of the most attractive shrubs. It is very frequently planted in suburban gardens. The graceful clusters of pink to rose purple flowers, which are wax-like in texture, are produced in great profusion from among the delicate foliage. They are a feature of the limestone hills and sandy soils along the coast. The closely related *Verticordias* are of considerable beauty, their brilliant feathery flowers are produced in dense spikes and range from purple to yellow. Individual flowers may exceed an inch in diameter. There are several species and among the best are *V. grandis*, *V. monadelpha*, *V. nitens* and *V. spicata*.

Callistemons, *Leptospermums* and *Melaleucas* are perhaps the most generally cultivated Australian members of the family *Myrtaceae*. Of the former only two species are found in the western regions. The other two genera are known locally as tea trees, so-called because the leaves were collected by CAPTAIN COOK's party to make an infusion, resembling tea, for the treatment of scurvy.

In forest country one of the most impressive sights is the beauty of form and colour of the many gum (eucalyptus) trees. They flower and fruit freely and the bright pink hue of the young foliage, followed by the elegant, glossy green leaves is a familiar spectacle. Several species are noteworthy for their brilliant flowers, while others are equally famous for the lovely colour tones of their trunks. The red-flowering gum (*E. ficifolia*) is restricted to a comparatively small area in Western Australia, but it is widely planted in parks and gardens. Of the giants of the forest which are of outstanding value for their timber (*E. marginata*), the source of the "jarrah" of commerce is the most important. Millions of acres of this species are grown in this State and replanting must continue in order to replace the vast eucalyptus forests being felled for timber. "Jarrah" was originally introduced into Britain under the name of Western Australian mahogany, but the former name was later adopted to distinguish it from American mahogany. Large quantities of "jarrah" were used in the construction of the Royal Naval Dockyard, and more recently its value for cabinet-making has been realized.

The qualup bell (*Pimelea physodes*) which inhabits the sandy-gravelly soils in the south is a desirable dwarf shrub. The glaucous foliage contrasts admirably with the pendulous bracts which conceal the small yellowish green flowers. These floral bracts vary in colour from intense purple to apple-green and they are sometimes streaked with intermediate hues. The "banjine" (*P. suaveolens*) is another worthy member of the genus, the flowers being lemon-yellow enlivened with orange anthers, forming drooping heads with silk-like green bracts.

The floral wealth of Western Australia owes much to members of the family, *Proteaceae*, which includes many impressive plants. The unique flower heads of some of the *Banksias* vary considerably and are a feature of the landscape. *B. grandis* with coarsely serrated leaves of palest green, and flower heads a foot long, is a handsome yellow species and *B. coccinea* bears large scarlet spikes, while *B. menziesii* has distinct red and yellow acorn-shaped flower heads. Then there is the holly-leaved species (*B. ilicifolia*), a tall shrub which bears flat clusters of red flowers surrounded by rosettes of prickly leaves.

Among *Grevilleas* there are some that are seldom cultivated in Britain. *G. excelsior* is a very handsome species with erect spikes of flaming orange-yellow flowers. *G. wilsoni*, which has red flowers, and *G. bipinnatifida*, pink flowers and contrasting dark green foliage.

Inhabiting the gravelly slopes in various regions there is an interesting shrub which is deserving of wider cultivation. This is *Isopogon sphaerocephalus*, a distinct species which produces hairy leaves and globular heads of flowers at the end of erect branches and they are succeeded by curious hairy cones. Many species of *Hakea* are found growing in a variety of situations and a considerable knowledge of the flora is required before attempting to identify the various species.

The native honeysuckle (*Lambertia multiflora*), which receives its local name from certain authorities because the flowers are reminiscent

of the European honeysuckle, is an attractive plant with many rich golden yellow flowers which are borne on reddish stems.

Along the foothills and valleys near the Swan river there are pretty patches of the morning iris (*Orthrosanthus laxus*), the transparent sky-blue flowers and grass-like foliage are delightful. Another species (*O. muelleri*) has bluish mauve flowers. Clumps of the yellow iris (*Patersonia xanthosia* and *P. glauca*) may still be found growing on the boundary of the capital city. The latter produces slender spikes of blue flowers.

The lily family is represented by several genera and the fringed lily (*Thysanotus dichotomus*) spreads a network of growths over low bushes, their trailing stems closely studded with dainty white and mauve flowers. The grass lily (*Agrostocrinum scabrum*) is found in the south-west coastal districts, where its exquisite blue flowers are conspicuous and the beautifully formed petals and grass-like foliage all combine to make this a most desirable plant.

The blue, red and yellow *Lechenaultias* are without doubt the most fascinating of Western Australian plants. Surely the quality of tone and purity of the lovely blue-flowered *L. biloba* is unexcelled anywhere. In spring it is a glorious sight in widely separated parts of the state. The flowers vary in colour from pale blue to deep ultramarine. Then there is *L. formosa*, which forms a thick mat of vivid scarlet flowers, and *L. linarioides*, common near the coast, which bears yellow flowers tinged with crimson.

The trigger plants (*Stylidiums*) are noteworthy for the ingenious action of the trigger-like style which, when an insect alights on it, throws it on to the stigma, thus aiding pollination. The members of this genus vary from tiny annuals to large shrubs and climbers, some are of great beauty and their peculiar form and colour of the flowers often causes them to be mistaken for orchids, of which there are nearly a hundred native to western regions.

Many Western Australian plants afford a striking example of their adaptability to dry poor soils. Although growing in districts where rain does not fall for several months they manage to flourish, nature having provided them with special qualities for withstanding drought. Some plants have an extended root system, thus they are able to obtain moisture from deeper strata of soil, others store water in bulbs, tubers and so on, while a great number have small leaves which reduces evaporation to a minimum. Then there is the case of the flattened leaf-stalks (phyllodes) of certain acacias and the thick spines with which certain other plants are provided.

The Western Australian flora possesses a great wealth of beautiful plants, but it will be realized that in the limits of this account many interesting ones must be omitted. The difficulty has been deciding which plants to include, there are, for example, several lovely orchids, while the list of trees and shrubs could be extended considerably.

ANCESTRAL CHINA ROSES

Gordon Rowley

THE recent rediscovery of a surviving ancestor of the modern roses in Bermuda has focused interest on the group we call the China roses. For the most up-to-date summary of their history we must turn to the work of DR. C. C. HURST, who published only one short account[1] but whose manuscripts have been preserved and made available to me through the kindness of MRS. R. HURST.

Two species are believed to lie at the foundation of this group: one familiar from cultivation, the other little more than a name on a map of China. The tea rose, *Rosa gigantea* Coll., comes from Burma and S.W. China and is rather tender, but given a sheltered south-facing wall it grows to an immense size and produces large, single creamy yellow blooms followed by hips like small apples in autumn. *Rosa chinensis* Jacq. *spontanea* Rehd. & Wils. is, unfortunately, not in cultivation and is known to us only from travellers to Ichang in Central China. There it grows as a rampant climber with hooked prickles and bears solitary, single, pink or red flowers not unlike those of the dog-rose.[2] We can infer that, like *R. gigantea*, it is a diploid with fourteen chromosomes and flowers only for a short period in early summer. Of the introduction of these wildings to Chinese gardens and their transformation into the dwarf, double, cluster-flowering, remontant China roses we know nothing. We can at best conjecture a series of chance mutations, hybridizations and selections similar to those producing a moss rose from the wild tetraploid *Rosa gallica* L. of Europe. Hurst lists four of the garden roses of China as the ancestral or "stud" introductions to Europe: one he considers a *chinensis* derivative, the other three descendants from the cross *chinensis* × *gigantea*, for which the binomial *R.* × *odorata* Sweet applies. The important thing is that all these early introductions from the Far East had in common one character lacking in European roses: a long flowering season from early summer until after the first frosts of winter. It was this feature, a single recessive gene, that caused so rapid a revolution in rose fashions throughout the world, and which earns the China roses a permanent place in rose collections apart from their merits as garden adornments.

What we grow today under the name of China roses is, however, an ill-defined group showing transitions to the Teas, Bourbons, Hybrid Perpetuals and Polyanthas of which they were the forerunners. HURST made a chromosome survey more than thirty years ago and found that two groups could be defined on the basis of chromosome number: the diploids with fourteen chromosomes (these more fertile and nearest the ancestral species) and the triploids with twenty-one. Some of the latter are barren and set no hips, although most produce some functional pollen.

DIPLOIDS	TRIPLOIDS
'Bengale de Cels'	'Bengale Communis'
chinensis	'Bengale Cramoisi'
chinensis minima	'Bengale Fabvier'
chinensis viridiflora	'Bengalensis'
'Common China'	*chinensis semperflorens* (2)
'Comtesse du Cayla'	'Cramoisie Superieure'
'Gloire des Laurentiae'	'Crimson China'
'Laurette Messimy'	'Damask China'
'Lawrenceana'	'Ducher China'
'Old Blush China'	'Fellemberg'
'Pink China'	'General Gordon'
'Rose du Bengale'	'Louis Philippe'
'Rosier des Indes'	'Louis Philippe', carnation sport
'Single Pink'	

Not all the above-mentioned roses are old in the sense that they date from the eighteenth-century introductions, and some of the names are synonymous or belong to plants which do not appear to be in cultivation any longer. As against these losses, however, we can add the very interesting discovery by MR. RICHARD THOMPSON in 1953 in Bermuda of a rose that approximates more closely than any other to the original Crimson China of GILBERT SLATER, who first brought it to Europe about 1792. Thanks to the great kindness of MRS. P. B. PATTISSON of the Bermuda Rose Society and MRS. H. RICHARDSON, plants of this rose were brought safely to the John Innes Horticultural Institution at Bayfordbury in 1957 where they quickly responded to cultivation and were exhibited in flower at the Chelsea Flower Show the following spring.

The Bermudan rose is not identical with the plant in cultivation under the name *R. chinensis semperflorens* and illustrated as such in MISS WILLMOTT'S *The Genus Rosa* I, 1914, 89. This latter and more familiar rose I will refer to as 'Miss Willmott's Crimson China'. It is also of early origin, a plant at Heathfield Nurseries, Welwyn, having been in the possession of the DARBY family since the days of the first rose introductions from China. The Bermuda *semperflorens*, however, exactly matches the plate in *Curtis's Bot. Mag.*, VIII, 1794, t. 284, wherein the epithet *semperflorens* is published for the first time. No doubt the two are sister seedlings. Both have loose crimson blooms developing a white "eye" at the centre and are intensely fragrant: as grown side by side outdoors 'Miss Willmott's' tends to have more dainty, pointed leaves, wiry glabrous pedicels and more cupped blooms. It remains extremely dwarf, rarely above 18 inches high, whereas the Bermuda plant attains several feet. Both tall and dwarf varieties are mentioned in the *Curtis* account, which states: "The largest plants . . . have not exceeded three feet: a variety of it much more robust, having usually several flowers on a footstalk, of a pale red colour,

and semi-double also, has more lately been introduced, and as far as we can learn from the same source."

JACQUIN in his *Hortus Schoenbrunnensis*, III, 1798, t. 281, figures the Bermuda-type *semperflorens* again, but a rather larger plant and with an inset of a pink flowered variety. The white eye is not evident, but this develops only as the bloom ages. Of the two pictures labelled *Rosa semperflorens* in *Nouveau Duhamel, ou Traité des Arbres et Arbustes*, VII, 1819, neither is correct—the first is the perpetual damask (*R. damascena* Mill. *semperflorens* Rowl.), the second a larger China rose probably the same as the Old Blush China. Closely related to both the surviving Crimson Chinas, the Bermudan and 'Miss Willmott's', is a third that goes under the name 'Miss Lowe'. This is identical with 'Miss Willmott's' except for its perfectly single, five-petalled blooms. A curious fact about these three ancestral Crimson Chinas is that they are all diploids with $2n = 14$, whereas in HURST's list all the Crimson Chinas are in the triploid column. 'Cramoisie Superieure', however, is confirmed as a triploid and may well be a giant seedling from 'Miss Willmott's Crimson China' derived from a diploid gamete. 'Fellemberg' and 'Hermosa' are also triploids. Fruit set is erratic or nil among the triploids, as would be expected, but the diploids in general form good pollen and hips. So far no fruits have been found to ripen on the Bermudan *semperflorens* here, although its pollen has given a full set of hips on *R. gigantea*.

By way of distinguishing the China roses still in cultivation the following key has been drawn up, and includes all those grown at Bayfordbury.

KEY TO THE COMMONLY CULTIVATED CHINA ROSES

Medium, recurrent-flowering shrubs or shrublets 1½ to 5 feet high. The dwarf Chinas (Miniatures) of small size constitute a separate group centering around *R. chinensis minima*.

(Somatic chromosome numbers in parentheses)

A	Flowers green or greenish	*viridiflora* 'Green Rose' (14)
AA	Flowers yellow, at least in the bud	
B	Flowers single, five-petalled	*mutabilis* 'Tipo Ideale' (14)
BB	Flowers semi-double	
C	Open flower pink flushed with orange, creamy yellow below	'Aurore' (14)
CC	Open flower deep pink, apricot below	'Comtesse du Cayla' (?)
AAA	Flowers pink	
D	Flowers single, five-petalled	
E	Flowers small, 2 inches diam. or less	'Miss Lawrence's Blush China' (14)

EE Flowers large, 3 inches diam.	'Single Pink China'	(14)
DD Flowers semi-double, with stamens and style more or less visible		
F Pedicels glandular	'Slater's Pink' or 'Old Blush China'	(14)
FF Pedicels eglandular	'Laurette Messimy'	(14)
DDD Flowers double, with centres covered by incurved petals		
G Pedicels glandular	'Hermosa'	(21)
GG Pedicels eglandular	'Le Vesuve'	(14)
AAAA Flowers scarlet or crimson		
H Flowers single, five-petalled	'Miss Lowe' or 'Sanguinea'	(14)
HH Flowers semi-double or double		
I Pedicels eglandular, hairy	'Fellemberg'	(21)
II Pedicels glandular, glabrous		
J Flowers rounded or pompom, very double		
K Flowers crimson, pompom, up to 2 inches diam.	'Nemesis'	(14)
KK Flowers scarlet, outer petals reflexed, 3 inches or more diam.	'Cramoisie Superieure'	(21)
JJ Flowers loose and not very double		
L Petals scarlet, about 15; sepals glandular; rachis and midribs pubescent	*semperflorens* 'Slater's Crimson China'	(14)
LL Petals crimson, often with a white midstripe, 20–25 or more including smaller inner ones; sepals eglandular; leaves glabrous	*semperflorens* 'Miss Willmott's Crimson China'	(14)

I should like to thank MR. M. PAINE for the cytological examination of the Bermudan *semperflorens*.

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LES FLORALIES INTERNATIONALES DE PARIS

APRIL 24–MAY 3, 1959

Patrick M. Synge

THIS magnificent exhibition was probably the largest flower show ever staged on the Continent. It exceeded Chelsea Shows in its size and rivalled it in the spectacle it presented. It was, however, very different from a Chelsea Show or a Show in one of our halls. It was designed rather as a floral spectacle than as a plantsman's flower show and much of its effect inevitably came from large masses of superbly grown florists' plants such as hydrangeas with their heavy heads of blue, mauve, pink or white and enormous specimens of aroids, ferns and other greenhouse plants.

It was staged in a completely novel exhibition building, the Palais de la Défense on the outskirts of Paris. This engineering and architectural wonder, for as such it may be rightly described, was triangular in shape with three massive arcs of concrete meeting in the centre to form a dome like a gigantic three-cornered hat, sprinkled liberally in the evening with lights like stars. There was no centre support and the three sides were of glass. The whole exhibition area was about 16 acres and this was the first exhibition to occupy the whole building to be staged there. In the centre the ground floor was open right to the roof and here was placed the spacious water-garden of Messrs. Vilmorin-Andrieux which won the first prize of three million francs for the most notable exhibit in the Show. Around the walls were four galleries, broader at the bottom and narrower at the top. These seemed less successful as exhibition sites since, except on the lowest one and on the top one where the light was excellent, they were darkened by low and heavy concrete ceilings and broad pillars. It was very unfortunate that the British Woodland Garden, the main British exhibit, and indeed the other exhibits from countries other than France were placed in these galleries, the two lower floors being filled with exhibits from French Provincial Regions, nurserymen and seedsmen.

In the evening, when lit up with innumerable lights of all kinds, the exhibition looked as lovely or even more lovely than in daylight and it was an unforgettable experience to stand in one of the higher galleries and look down or to wander through the tropical luxuriance of the greenhouse, or to lean over the gallery above the Vilmorin water garden where the curving outlines of the islands and the pools were accentuated by broad patterns of pebbles of three different sizes and colours, thus combining in an unusual way the traditional curving shapes of the beds in a French Formal Garden with the informality of stepping-stones and masses of herbaceous plants and shrubs along the banks. A few tall and graceful birches and other trees lightened the effect. This really

Photos: Royal Botanic Gardens, Kew

FIG. 75—The Pagoda (see p. 257)

FIG. 76—Temperate House and Australian House

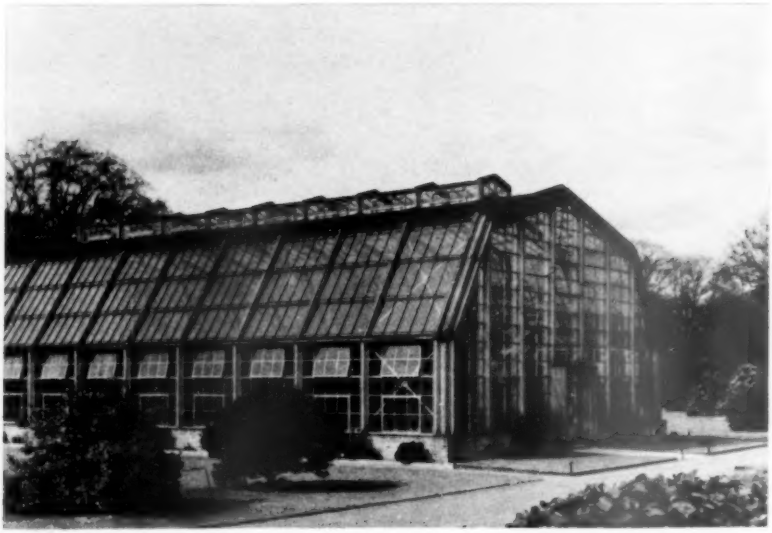

FIG. 77—Australian House (see p. 261)

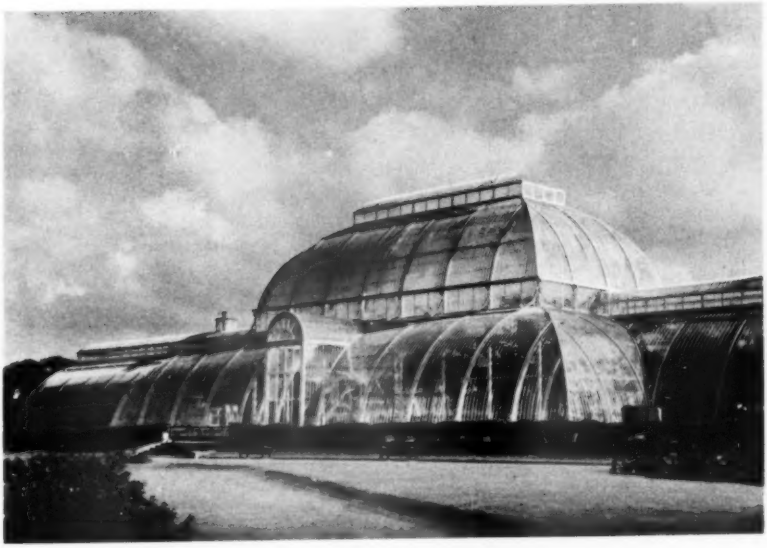

FIG. 78—Palm House from the west

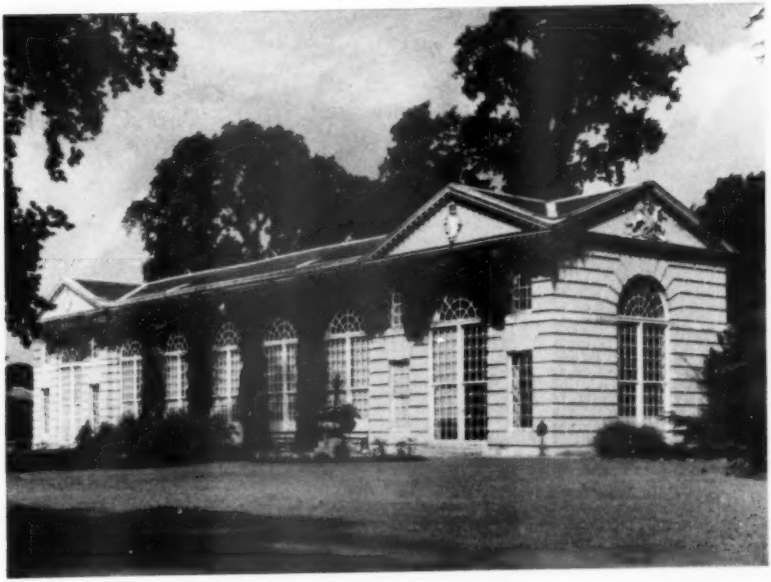

FIG. 79—The Orangery

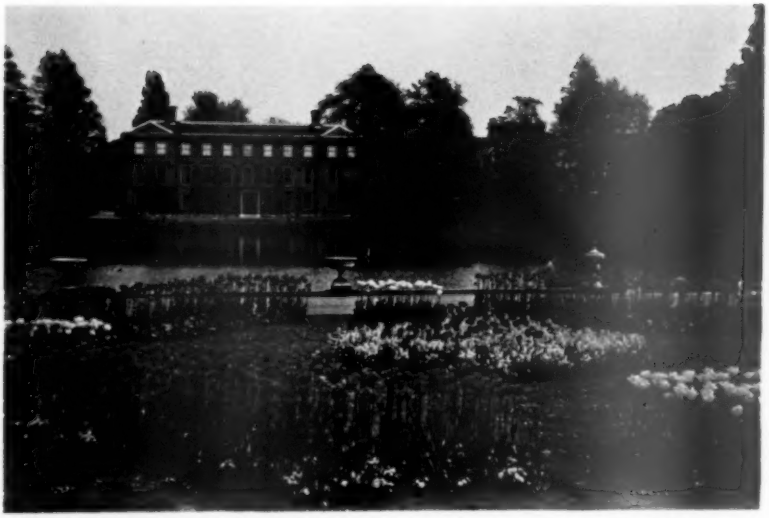

FIG. 80—Bedding to the east of Palm House with Museum I in the background

FIG. 81—Rhododendron Dell

FIG. 82—Almonds, *Prunus pollardii* in flower near the lake

FIG. 83—Old tree of *Magnolia* × *soulangiana*

FIG. 84—Sir Joseph D. Hooker (see p. 259)

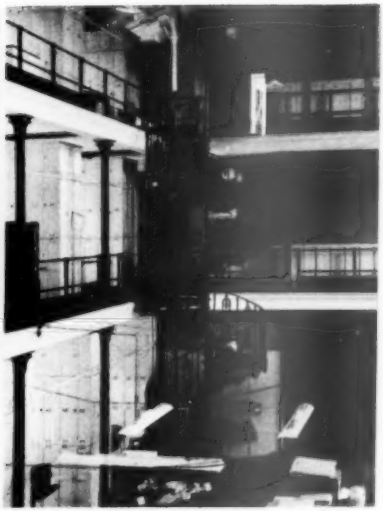

FIG. 85—The Herbarium. Part of the interior of Wing C (see p. 261)

FIG. 86—Daffodils towards Brentford Ferry Gate

Photos: British Travel and Holidays Association

FIG. 87—Part of the Exhibition

FIG. 88—An unusually fine Cymbidium in the British exhibit of greenhouse plants. *Cymbidium* (Princess Elizabeth g.) 'Vanguard'

(see p. 276)

Photos: British Travel and Holidays Association

FIG. 89—Part of the principal British exhibit arranged by Mr. F. Hanger, V.M.H., showing dwarf azaleas, rhododendrons, primulas and *Pleione formosana* on a ledge of rock (see p. 275)

FIG. 90—Part of the Water Garden staged by Mr. Russel Page for Messrs. Vilmorin-Andrieux as seen from above (see p. 274)

outstanding exhibit was designed and staged by MR. RUSSELL PAGE, the famous English garden architect, who in recent years has practised in France and been closely associated with Messrs. Vilmorin-Andrieux, whose name is, of course, a household word in France, where seeds or plants are mentioned, as well as in many other countries. Its theme was "Le Jardin de l'amateur éclairé". It was designed to make an interesting pattern when seen from above and also to be equally interesting when seen on its own level and in this it succeeded.

Among the plants specially noted there were Vilmorin strains of *Primula obconica* and a fine lot of the Golden Clarion group of lilies as well as unusually fine Lilies of the Valley. The blending of the colours was for the most part soft and pleasing and the exhibit was packed with well grown specimens.

Two second prizes of two million francs each were awarded, one to the Belgian exhibit of evergreen azaleas, magnificently grown plants covered with flower and some trained into unusual shapes, the other to the British Woodland Garden which formed the main British exhibit. This was arranged by the British Committee for Overseas Flower Shows of which the Chairman is our President, THE HON. DAVID BOWES LYON, V.M.H., and the Vice-Chairman, MR. ROY HAY. It was sponsored by The British Council and The British Travel and Holiday, Association as well as by The Royal Horticultural Society, and gardeners of this country have every reason to be proud of the exhibits which were lent by a large number of growers—seventy-eight in all. MR. FRANCIS HANGER, V.M.H., the Society's Curator at Wisley, served as Executive Officer and was responsible for the choice of plants and for the arrangement of the three exhibits—no light task, which began many months ago. Many of the plants were collected together at Wisley and taken over to France in large road and twenty-four rail containers. To MR. HANGER and MR. HAY and their hard-working band of helpers a great debt of thanks is owed by all the many thousands who have visited and enjoyed the exhibition, and there were many English gardeners among them, revelling also in the beauties of Paris in the spring.

MR. HANGER's skill at arranging a woodland garden exhibit is well known to Fellows who have visited The Chelsea Show in recent years and this was certainly up to the standard of those, if not surpassing them. Grassy glades ran through the exhibit and it was also edged with turves. On one corner was a very large specimen of Rhododendron 'Lady Chamberlain', dripping with its yellow and pink bells; other fine rhododendrons included a number raised at Wisley such as the lovely yellow 'Moonshine' and the deep red 'Beefeater' and 'Billy Budd' and 'Elizabeth' from Bodnant. The large-leaved species were represented by young plants of *R. sinogrande*. Deciduous hybrid azaleas raised at Wisley in recent years aroused much interest and brought both strong and pale colours into the group. There were also hybrid azaleas from Exbury and from the Goldsworth nurseries as well as some hybrid rhododendrons from the same source, specially brought into flower for

the Show by MR. O. C. A. SLOCOCK himself. There were standard cherries to give height and lightness, as well as metasequoias. A group of tree paeonies, sumptuous and beautiful, were placed cleverly as a neighbour to a corner group of the unusual *Menziesia ciliicalyx purpurea*. There were lilies such as *L. auratum* 'Lavender Lady' and *platyphyllum* and the Backhouse hybrids, while among the herbaceous plants were *Meconopsis grandis* and *M. integrifolia*, the great yellow poppy, *Dodecatheon pauciflorum*, hostas and masses of double kingcups (calthas), and primroses.

Two enormous specimens of Rhododendron 'Carmen' (*R. didymum* × *R. forrestii* var. *repens*) from Exbury, their blood-red bells gleaming like wine with the light behind them, were cleverly placed at the edge of a small section of rockwork and, as a contrast, groups of that lovely and almost hardy orchid *Pleione formosana* were arranged on a ledge of rock with *Primula nutans*. A few camellias were in the group and these included the pale blush-pink hybrid 'Donation' and also a good upright-growing *C. japonica* 'Amonagawa' with large double white flowers. Kurume azaleas were liberally placed through the group as well as Japanese maples. As an exhibit it was a tremendous contrast to anything else in the Exhibition and showed well the difference of approach between the English gardener and some of his Continental competitors.

There was in addition a group of British-raised florists' flowers, arranged by MR. R. JEOFFROY of Sutton & Sons Ltd.; Schizanthus Sutton's Pansy-flowered formed the backbone and there were carnations, roses, including the fine red 'New Yorker', *Venidio-Arctotis*, that triumph of MR. A. P. BALFOUR's raising, foxgloves, the new Excelsior, while Polyanthus Langdon's Mixed showed that we have no superior in the raising and selection of these flowers. Auriculas glowed like jewels among green moss and a few narcissi represented what was hoped would have been a large group. Only the early season defeated this. 'Edith Amy' from MRS. HANGER, an attractive cream-coloured trumpet daffodil, was a promising variety shown and there was also a fine red cup Seedling 301 from the same source.

In staging these exhibits MR. HANGER had the help of a band of extremely hardworking helpers, who included MR. WILL INGWERSEN, MR. and MRS. E. STEWART, MR. C. GREGORY, MR. F. STREET, MR. R. ALLWOOD, MR. J. LANGDON, MRS. F. HANGER, MR. and MRS. ROCHFORD, MR. J. MIDDLETON and MRS. R. HAY, while from Wisley came MR. O. J. CLAYTON, MR. P. J. DYKES, the Superintendents of the Floral Department and of the Greenhouses respectively, and MISS M. MALLOY.

Along one side of the first floor was a large heated greenhouse, and here the British exhibit had been arranged by MR. T. ROCHFORD and consisted of four bays of orchids and greenhouse plants. HER MAJESTY THE QUEEN most graciously lent to the exhibit a very fine group of cymbidiums from the Windsor Hybrids and these mixed with a few others formed a centre-piece of great distinction and proved immensely popular with the crowds. The whole exhibit was awarded one of the special prix d'honneur of 500,000 francs while a number of individual plants

in it also received awards in the various competitive classes. Notable among the orchids, especially for the size of its flowers, was 'Vanguard', a cymbidium of the Princess Elizabeth grex, which had been lent by LORD HOTHFIELD and which won the first prize for the most outstanding cymbidium. To the British group also went the first prizes for the most outstanding cypripedium, for rare orchids and for dendrobiums, as well as a special prize for the most remarkable new orchid and the first prize for the best collection of greenhouse foliage plants, as well as a number more of first and second prizes for various other groups of plants. In all the prize money reached about four and a half million francs for the three British exhibits, a very considerable achievement.

In the greenhouses also were wonderful specimens of *Phalaenopsis* shown by MARCEL LECOUFLE and Messrs. Vacherot et Lecoufle of Boissie-St. Léger. M. LECOUFLE's largest group simulated with great success an unusually floriferous tropical jungle through which ran a little stream with exotic birds among which floated a small dug-out canoe of orchids. A little house of palm leaves had orchids on the roof and walls while a rattan bridge even seemed to sway perilously with its load of orchids. A roof was made from rich brown fibres from which dripped pink *Medinillas* and other choice plants. In one corner was a tree with nests of weaver birds and in another a wonderful banana with deep crimson midribs and veins to its enormous leaves. This was a fascinating and really beautiful as well as most ingeniously staged exhibit which very well deserved its prix d'honneur of 500,000 francs. There were many other magnificent plants in the greenhouses among the groups.

It is impossible to describe adequately such a great variety of exhibits as this exhibition presented. One can only pick out a few items which particularly caught one's eye. The bird's nest ferns (*Asplenium nidus*) with their enormous bright green fronds staged by the Department of the Côte d'Azur and Alpes Maritimes were the finest that I have ever seen and looked particularly fascinating from the gallery above, while in the same group were some positively gigantic specimens of the ferns *Nephrolepis* 'N. Roosevelt' and 'A. Lambert', which looked very well contrasted with three large, grey feathery olives, and also fastigiate grey cypresses. The aroids in this group were also outstanding. From Provence came the finest specimen I have ever seen of the beautiful pink form of *Raphiolepis delacourii*, about 6 feet in height and perfectly domed and covered with flower.

The dark purple saintpaulias on the German exhibit were outstanding for their richness and floriferousness, arranged in serried rows in contrast to the British ones which hung more sparsely from a mossy bank. In this exhibit the standard of cultivation was unusually high as, indeed, we have seen at Chelsea. The Belgian evergreen azaleas and the Dutch *molle-japonicum* hybrids from Boskoop made most colourful displays, while the scent of the Dutch hyacinths was easily the strongest of any scents in the exhibition. Their arrangement of tulips against white pillars was also very effective.

There were sections for flower arrangements both by professionals and by amateurs. The standard of the latter was very variable, but the British competitors contributed some very lovely vases, while there were two French arrangements in shades of green and white which would have given me much pleasure in my own house. The Gold Cup was won by MRS. JOAN COMPTON of Sussex for a small arrangement.

The scientific section of the exhibition was rather sparse, but of particular interest was the automatically controlled electrical greenhouse arranged by MR. ALIC GRAY of the British Electricity Authority. In it were propagating frames and also the MacPenny mist apparatus controlled by an "electronic leaf" which is proving so successful in rooting difficult cuttings. MR. GRAY was also responsible for the lighting on the British Woodland Garden and on the British group in the greenhouses.

The exhibition attracted great crowds, but the alleyways were wide and it was possible to move everywhere except in the greenhouse without serious inconvenience. This exhibition must, indeed, be considered as a very worthy opening for such an exciting new building.

NOTES FROM FELLOWS

Old Irises, Chrysanthemums and other Flowers

I READ with interest MR. W. P. KING's plea for the preservation of the old bearded irises, and in many ways agree with him, but it is important that sentiment should not play too great a part in these matters. MR. KING cites the return to popularity of the old roses, but these have come into their own again as they offer certain characters to the garden which no other roses give, viz., scent, shape, colours, vigour and annual floriferousness. Before resuscitating the older irises, which after all are not so very old, we must ask ourselves in what way they appear preferable to the magnificently coloured modern varieties.

In my opinion the moderns have certain failings which are deplorable: their flowers are sometimes so large that they cannot stand the wind; the tendency is towards "flaring" falls—nearly horizontal—which detract from their garden value, by rendering the flowers less conspicuous at a distance; they frequently require staking; their rhizomes are too long, resulting in such a loose network of these on the surface of the soil that weeds crop up—and irises cannot be hoed, nor do they thrive under a weed-smothering mulch. They therefore require a lot of labour as opposed to stalwart ground-covering plants. Against this, one must balance the wonderful flowers, unsurpassed in beauty throughout the floral world.

Now what have the older irises to offer? Smaller flowers it is true, and not perhaps worth looking at in comparison with modern varieties; their falls were poor, and their substance sometimes weak. But they did not require staking; their rhizomes clustered on the ground so densely that weeds did not crop up; and in both these respects they

remain "good garden plants", content to go on and flower freely for years without division. Some of us have time to cosset, divide, stake and treat as individuals our favourite flowers in well-cultivated ground in almost kitchen-garden style. This is one type of gardening and, fortunately for newly bred plants, many delight in it. Personally, I like plants to look after themselves as do shrubs, peonies, day lilies, epimediums, geraniums (hardy) and acanthuses, to take but a few examples. Where they grow there is no work.

I do not know Iris 'Hakador' to which MR. KING refers; 'Alcazar' I used to enjoy and respect because of its free-flowering habit. In the days when there was nothing much but the old blue flag, 'Kochii', *pallida*, 'Fro', and *albicans*, 'Alcazar' was a wonderful addition, but I should now class it as a poor modern variety rather than a good old one. It is very free flowering, stands well, but has poor falls and a dirty colour; on the other hand it is now so common that it is never likely to die out. The type of iris I should like to see more popular is found in 'Corrida', 'Mme. Yvonne Pelletier', both slender, dainty *pallida* types with small lilac-blue flowers ideal for cutting, and the old *I. pallida dalmatica* which still remains the best iris for leaf effect in the garden. It is almost the only iris, new or old, whose leaves remain in beauty through the growing season, and their grey-green tone is invaluable when it is out of flower.

In common with most plants, the closer we keep to the original species, the less trouble we have from pests and diseases, and very often, less garden work. These troubles occur more often with man-made strains.

There are many old flowers that have been lost and which I should like to see again, such as the double-flowered rocket, double primroses, and pinks and auriculas, but probably they need re-raising to improve their vigour. Among Michaelmas daisies much the same thing is happening as in the irises, but with different results. With the advent of larger flowers, brighter colours, and dwarf growth we are losing the exquisite grace and charm of such splendid varieties as 'Climax' and 'Queen Mary', which have never been surpassed, nor I think even equalled.

The last three mild autumns have shown what the old hardy chrysanthemums can do. Here surely is a group of plants which should be re-assessed in the light of our present gardening strictures. As one goes through the country one sees about a dozen varieties which may be found in every town and village, on any soil, in sun or shade, in light soil and in heavy, without dividing, manuring or staking, and presenting a great flush of colour in October and November. They are headed by the ubiquitous double bronzy-mahogany variety which is undoubtedly one of the most satisfactory garden plants ever evolved, whether one likes its colour or not. There are good pinks also, single and double, yellows and plum colours to dark crimson. Who knows their names? The only one I have been able to identify is the 'Old Cottage Pink' or 'Emperor of China', whose splendid autumn leaf colour recommended it to GERTRUDE JEKYLL, besides its floral excellence. Can anyone tell me

where I can find a named collection of these old varieties? I am not ready for chrysanthemums in August and September, but welcome them when the sharp tang of their fragrance adds to the freshness of the autumn air. They are not too large-flowered and last well in water. This is the type of plant for the busy gardener of today, not one that has to be staked, disbudded, and wintered in a frame.

G. S. THOMAS

Seeding of Hoya carnosa

Is this unique? I have been in direct contact with the greenhouse climber *Hoya carnosa* since 1894, my first year in a large garden, and have seen it growing in the North, the Midlands, the South and the West, but I had never seen it produce seed until 1957. It has now produced sixteen pods, from 4 to 5 inches long, containing up to thirty seeds in each; when ripe it produces a remarkable, fascinating brown seed, one-eighth of an inch long, supported by a gossamer-like frill to support it in flight.

THOMAS BOWSER

Roseville,
Yeovil.

Residual Herbicides

As we have experimented for a number of years on various residual herbicides on raspberries and strawberries I should like to add a few points to the account of MR. PAUL BRACEY's most interesting lecture on residual herbicides.

We have used 2,4DES off and on for the past six or seven years. It has worked excellently so long as the top soil has been moist and the weather fairly warm at the time of application, but on one occasion the weedkiller was applied at the beginning of a dry spell with cold easterly winds and the result was negligible.

We find that dalapon seriously damages young raspberry canes and stunts the side shoots of fruiting canes, thus seriously reducing the crop. This damage was done in early spring before the spawn appeared above ground.

I am a little surprised that MR. BRACEY did not mention I.P.C., now obtainable in this country under the name of Propham. We tested it on a fruiting plantation of strawberries, April application, a few years ago and found it quite safe and very satisfactory. The soil was completely clear until well on in September. We find spring application of C.I.P.C. very dangerous. Both 'Talisman' and 'Red Gauntlet' have suffered. This season we are trying 8 lb. of Propham and 4 lb. of 2,4DES in 100 gallons of water per acre to both strawberries and raspberries.

Finally, in tests made last year in a raspberry plantation, with a sandy soil full of annual weeds and annual meadow grass, by far the most

satisfactory "kill" was made by Monuron (C.M.U.) at 2 lb. per acre, applied late in March, no harm being done to either old or young canes. This is now used as a total weedicide at a rate of 30 to 40 lb per acre round industrial plants, where sodium chlorate presents too great a fire risk, but in small doses it is excellent in raspberry plantations. It is, however, very insoluble and further experiments must take place to see whether a build up in the soil over two or more years might ultimately cause serious damage.

E. H. M. COX

Glendoick,
Perth.

St. Phocas

I was interested to read in the April issue of the JOURNAL the article on St. Fiaker. I have always been under the impression that St. Phocas was considered the patron saint of gardeners in this country.

I know of an East Anglian seedsman at Bury St. Edmunds who has placed a statue of St. Phocas in a niche above his shop. I also know of a delightful gardeners' greeting card which besides quoting a few verses from the "Song of Brother Sun" by St. Francis of Assisi depicts a drawing of St. Phocas showing him in the costume of the fourth century —a rough sack-like garment known as a "chiton" with a spade in his right hand and a large-brimmed hat on his head.

Perhaps readers would be interested in a brief history of this gardener and martyr-saint who died about A.D. 303 and whose feast-day is kept on July 3. St. Phocas lived near Sinope in Pontus late in the third century. He was renowned for his Christian piety, holding an open house for strangers visiting the city and supported the poor with the produce of his garden.

In 303, a cruel persecution raged, probably that of Diocletian, and Phocas was impeached as a Christian, and such was the notoriety of his crime that the formality of a trial was superseded. The enemies of the Church sent their executioners with an order to kill him on the spot.

Arriving at Sinope, they did not enter the town, but stopping at his house, without any previous knowledge of his identity, took up lodgings for the night. Being charmed with his courteous and charitable behaviour, they disclosed to him at supper the errand upon which they were sent. He assured them that he knew the man they were looking for and promised to produce him the following morning. During that night he did his last bit of gardening—he dug his own grave and spent the night in disposing his soul for his last hours. In the morning he revealed his identity to his guests—who were filled with remorse—but he assured them that in making a martyr of him they were carrying out God's will. One of his persecutors cut off his head with a sword.

He was very famous in the East, and a church was built in his honour in Rome, where his head was enshrined.

A. G. SMITH

WISLEY TRIALS, 1958

RUST-RESISTANT ANTIRRHINUMS

Sixty-two stocks of rust-resistant antirrhinums were received for trial at Wisley in 1958. The trial was sown under glass on February 12, 1958, and the resulting seedlings were pricked off into seed trays on March 7, 1958. The plants were planted out in the open, where they were to flower, on May 14, 1958. The dwarf varieties were planted in rows 12 inches apart; the intermediate varieties in rows 15 inches apart, and the tall varieties in rows 18 inches apart; the plants being spaced in each case 9 inches apart in the rows. Sixty plants of each stock were grown and two rows of Antirrhinum 'Malmaison', a variety particularly susceptible to rust disease (*Puccinia antirrhini*), were planted between stocks as indicator plants. The plants were sprayed on four occasions with the spores of the rust fungus (*Puccinia antirrhini*) which were suspended in water, and infection by the rust disease later became general on all susceptible plants growing in the trial. All the plants growing in the trial were examined for rust infection and only those stocks completely free from rust disease were considered for awards.

The trial was inspected by a sub-committee of the Floral Committee A on July 11, 18, 25, August 1, 8 and 19, 1958. The Committee considered the following points when recommending awards: (*a*) complete resistance to rust disease, (*b*) flower character, (*c*) trueness of stock, and on its recommendation the Council has made the following awards to rust-resistant antirrhinums.

The number in brackets after the description of the stock is that under which it was grown in the trial.

TOREADOR. (Raised at The Royal Horticultural Society's Gardens, Wisley, Ripley, Woking, Surrey, by Mr. D. E. Green, M.Sc., and included in the trial by the Director.) **A.M.** July 18, 1958. Plant 24 to 26 inches high, compact and erect habit; inflorescence long, branched, compact; flowers medium size, a deeper richer velvety shade than Blood Red (H.C.C. 820). [28]

ORANGE GLOW. (Raised and introduced by Messrs. Hurst & Son Ltd. and sent by Messrs. Watkins & Simpson Ltd., 26–29 Drury Lane, Covent Garden, London, W.C.2) **A.M.** July 18, 1958. Plant 22 to 24 inches high, compact and erect habit; inflorescence long, branched, compact; flowers large, upper and lower lobes Nasturtium Red (H.C.C. 14/2); lip Lemon Yellow (H.C.C. 4); tube Fuchsine Pink (H.C.C. 627/2). [18]

VICTORY. (Sent by Messrs. Hurst & Son Ltd., Kelvedon House, 60–64 Artillery Lane, London, E.1, and Messrs. Watkins & Simpson Ltd.) **A.M.** August 19, 1958. Plant 28 inches high, compact and erect habit; inflorescence medium length, not branched, compact; flowers medium size, upper and lower lobes Carrot Red (H.C.C. 612/2) slightly tinged Phlox Pink (H.C.C. 625/2); lip Aureolin (H.C.C. 3/1); tube Phlox Pink (H.C.C. 625/2). [16 and 17]

YELLOW FREEDOM. (Raised and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** July 18, 1958. Plant 22 to 24 inches high, compact and erect habit; inflorescence medium length, branched, compact; flowers medium size, upper and lower lobes Primrose Yellow (H.C.C. 601/1); lip Primrose Yellow (H.C.C. 601); tube white. [9]

CORAL MONARCH. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 18, 1958. Plant 20 to 22 inches high, compact and erect habit; inflorescence medium length, branched, fairly compact; flowers small to medium size, upper and lower lobes Rose Madder (H.C.C. 23/2); lip touched yellow. [20]

GOLDILOCKS. (Raised, introduced and sent by Messrs. Charles Sharpe & Co. Ltd., Sleaford, Lincs.) **H.C.** July 25, 1958. Plant 24 to 28 inches high, compact and erect habit; inflorescence medium length, branched, compact; flowers medium size, upper and lower lobes Primrose Yellow (H.C.C. 601); lip Dresden Yellow (H.C.C. 64); tube white. [40]

ORANGE GLOW. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant 18 to 20 inches high, very compact and erect habit; inflorescence medium length, branched, compact; flowers large, upper and lower lobes Spanish Orange (H.C.C. 010); lip touched yellow; tube pink; buds and young blooms tinged pink. [19]

POLARIS. (Raised at The Royal Horticultural Society's Gardens, by Mr. D. E. Green, M.Sc., and included in the trial by the Director.) **H.C.** July 25, 1958. Plant 28 to 30 inches high, compact and very erect habit; inflorescence long, branched, compact; flowers medium size, upper and lower lobes white; lip touched yellow. [6]

WISLEY BRIDESMAID. (Raised at The Royal Horticultural Society's Gardens by Mr. D. E. Green, M.Sc., and sent by Messrs. Hurst & Son Ltd.) **H.C.** August 1, 1958. Plant 3 to 3½ feet high, compact and erect habit; inflorescence long, not branched, compact; flowers large, upper and lower lobes Camellia Rose (H.C.C. 622/1); lip Camellia Rose (H.C.C. 622); tube pink. [45]

EARLY-FLOWERING CHRYSANTHEMUMS

One hundred and forty-four stocks of chrysanthemums were grown at Wisley in 1958. Fifty-six of these were grown for the first time, having been selected during 1957 for trial at Wisley by the Joint Chrysanthemum Committee of The Royal Horticultural Society and The National Chrysanthemum Society.

Cuttings were rooted during early March, the rooted cuttings being potted up into three-inch pots and grown on in a cool greenhouse. The plants were removed from the pots and planted in a cold frame from which they were planted out in the open ground on May 1, 1958. Twelve plants of the disbudded varieties and six plants of the pompon and spray varieties were grown. The disbudded varieties were stopped, where necessary, to encourage the production of eight to twelve blooms per plant.

Sprays of parathion at 0·01 per cent active ingredient were used as a precaution against chrysanthemum eelworm (*Aphelenchoides ritzema-bosi*).

The trial was inspected by the Joint Chrysanthemum Committee on August 14 and September 22, 1958, and on its recommendation The Royal Horticultural Society and The National Chrysanthemum Society have made jointly the following awards to chrysanthemums after trial at Wisley.

The varieties are arranged in this report according to the classification of The National Chrysanthemum Society.

The number in brackets after the description of the variety was that under which it was grown in the trial.

SECTION 20. OUTDOOR VARIETIES, INCURVED

(*b*) Medium-flowered

White

JACQUELINE. (Raised, introduced and sent by Messrs. J. & T. Johnson, The Nurseries, Tibshelf, Derbyshire.) **A.M.** August 14, 1958, as a disbudded variety for garden decoration. Plant 4½ feet high, compact and erect, bearing flower stems 22 inches long. Flowers 4¼ to 4½ inches diameter, outer florets pale cream, inner florets deep cream, reverse pale cream. [66]

SECTION 21. OUTDOOR VARIETIES, REFLEXED

(*b*) Medium-flowered

Bronze

WELBECK. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 14, 1958, as a disbudded variety for garden decoration. Plant 2½ to 2¾ feet high, compact and erect, bearing flower stems 22 to 24 inches long. Flowers 5 inches diameter, outer florets Yellow Ochre (H.C.C. 07) lightly overlaid Fire Red (H.C.C. 15/1), inner florets same colour as outer florets but heavily overlaid Fire Red (H.C.C. 15), reverse amber yellow. [117]

Pink

CONFIDENCE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 14, 1958, as a disbudded variety for garden decoration. Plant 4½ feet high, compact and erect, bearing flower stems 30 to 36 inches long. Flowers 4¾ inches diameter, Persian Rose (H.C.C. between 628/2 and 628/3). [79]

EUGENE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 14, 1958, as a disbudded variety for garden decoration. Plant 4 feet high, compact and erect, bearing flower stems 27 inches long. Flowers 5¼ inches diameter, Roseine Purple (H.C.C. between 629/2 and 629/3). [80]

Red

APPEAL. (Raised by Mr. H. Shoesmith, V.M.H., introduced and sent by Mr. Frank Rowe, Rylands Nurseries, Wellington, Somerset.) **A.M.** August 14, 1958, as a disbudded variety for garden decoration. Plant 4 to 4½ feet high, compact and erect, bearing flower stems 30 inches long. Flowers 5½ to 5¾ inches diameter, outer florets a shade near Cardinal Red (H.C.C. 822), inner florets slightly deeper colour than outer florets, reverse gold. [122]

Salmon

AILEEN. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 14, 1958, as a disbudded variety for garden decoration. Plant 3½ to 4 feet high, compact and erect, bearing flower stems 30 inches long. Flowers 4¾ inches diameter, outer florets Salmon (H.C.C. between 412 and 412/3) slightly flushed Camellia Rose (H.C.C. 622/3), inner florets slightly deeper colour. [77]

White

SNOWDANCE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** September 22, 1958, as a disbudded variety for garden decoration. Plant 3½ to 4 feet high, compact and erect, bearing flower stems 24 to 36 inches long. Flowers 4½ to 5 inches diameter, outer florets white, inner florets pale cream. [64]

Yellow

STARBRITE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 14, 1958, as a disbudded variety for garden decoration. Plant 4 feet high, compact and erect, bearing flower stems 30 to 34 inches long. Flowers 5¼ to 5½ inches diameter, Canary Yellow (H.C.C. 2). [100]

(*c*) Small-flowered

Pink

LILAC DAY. (Sent by Messrs. Elm House Nurseries, Walpole St. Peter, Wisbech, Cambs.) **A.M.** September 22, 1958, as a spray variety for garden decoration. Plant 3¼ feet high, compact and erect, bearing flower stems 24 to 30 inches long. Flowers 3 to 3¼ inches diameter, Magenta (H.C.C. between 27/1 and 27/2), inner florets tinged light bronze. [63]

SECTION 24. OUTDOOR VARIETIES, POMPON

(*a*) Tall

Light Bronze

SUNSET. (Sent by Messrs. Elm House Nurseries.) **A.M.** August 14, 1958, as a spray variety for garden decoration. Plant 28 inches high, compact, bushy and erect, bearing flower stems 15 to 20 inches long. Flowers 2 inches diameter, a bright orange bronze near Mars Orange (H.C.C. 013). [27]

Other Colours

LUSTRE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** September 22, 1958, as a spray variety for garden decoration. Plant 3 feet high, compact and erect, bearing flower stems 24 to 28 inches long. Flowers 1¾ inches diameter, a shade near Delft Rose (H.C.C. 020/1). [26]

(*b*) Dwarf

Pale Pink

LITTLE LOUISE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 14, 1958, as a spray variety for garden decoration. Plant 24 inches high, compact, bushy and erect, bearing flower stems 12 to 14 inches long. Flowers 1¾ inches diameter, a delicate pink near Rhodamine Pink (H.C.C. 527/3). [11]

SALPIGLOSSIS

Twelve stocks of salpiglossis were received for trial at Wisley in 1958. The trial was sown under glass on March 27, 1958, and the resulting seedlings were pricked off into seed trays on April 14, 1958. The plants were planted out into the open, where they were intended to flower, in rows 2 feet apart, spacing the plants 18 inches apart in the rows, on June 3, 1958.

The trial was inspected by a sub-committee of the Floral Committee A on July 25, and August 1, 1958, and on its recommendation the Council has made the following awards to salpiglossis.

The number in brackets after the description of the variety was that under which it was grown in the trial.

TRIUMPH BLUE AND GOLD. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd., Reading, Berks.) **A.M.** August 1, 1958. Plant 28 inches high, 16 inches spread, very vigorous, very free flowering; flowers 3 inches diameter, 1¼ inches long, funnel shaped, petals slightly reflexed,

Gentian Blue (H.C.C. 42/2) veined slightly darker colour than Purple Madder (H.C.C. 1028), changing to Buttercup Yellow (H.C.C. 5/1) at throat and veined Purple Madder (H.C.C. 1028). [5]

TRIUMPH IVORY AND GOLD. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd.) **A.M.** July 25, 1958. Plant 24 to 30 inches high, 15 to 18 inches spread, vigorous, free flowering; flowers 3 inches diameter, 1¾ inches long, funnel shaped, petals slightly recurved, Empire Yellow (H.C.C. 603/1) at margins and veined Buttercup Yellow (H.C.C. 5), Buttercup Yellow (H.C.C. 5) at throat. [1]

TRIUMPH MIXED. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd.) **A.M.** July 25, 1958. Plant 24 to 30 inches high, 14 to 16 inches spread, very vigorous, free flowering; flowers 3¼ inches diameter, 1 to 1½ inches long, petals slightly recurved, mixed colours, shades of yellow with gold markings, shades of pink, purple, magenta and crimson with gold and red and gold markings, shades of blue with maroon and yellow markings. [8]

TRIUMPH SCARLET AND GOLD. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd.) **A.M.** July 25, 1958. Plant 24 inches high, 9 to 12 inches spread, vigorous, free flowering; flowers 3¼ to 3½ inches diameter, 1¾ inches long, fully expanded funnel shaped, petals slightly recurving, Buttercup Yellow (H.C.C. 5), finely veined at throat Currant Red (H.C.C. 821/1), heavier veining towards margins Currant Red (H.C.C. 821). [4]

TRIUMPH YELLOW. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd.) **A.M.** August 1, 1958. Plant 24 to 28 inches high, 16 to 18 inches spread, vigorous, free flowering; flowers 2½ inches diameter, 1⅝ inches long, funnel shaped, petals very recurved, Lemon Yellow (H.C.C. 4). [2]

TRIUMPH AURORA. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd.) **H.C.** July 25, 1958. Plant 24 to 28 inches high, 14 to 16 inches spread, vigorous, free flowering; flowers 3 inches diameter, 1¾ inches long, funnel shaped, petals slightly reflexed, Lemon Yellow (H.C.C. 4), heavily veined Currant Red (H.C.C. 821). [3]

MAIN-CROP CARROTS

Sixty-eight stocks of main-crop carrots were received for trial at Wisley in 1958. The trial was sown on July 2, 1958, in shallow drills 1 foot apart. After germination, the seedlings were thinned to 6 inches apart in the rows.

A base dressing of fertilizer consisting of 2 cwt. per acre of sulphate of ammonia, 3 cwt. per acre of superphosphate of lime and 2 cwt. per acre of sulphate of potash, was applied 10 days prior to sowing.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on October 30, 1958, and on its recommendation the Council has made the following awards to main-crop carrots.

The number in brackets after the description of the variety was that under which it was grown in the trial.

KAROTINA. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd., 75 Vestergade, Odense, Denmark.) **A.M.** October 30, 1958. Plant 18 to 20 inches high, vigorous; foliage medium to large, erect, dark green; root 6½ to 8 inches long, 1¼ to 1½ inches wide, medium to dark red, half long, cylindrical, very regular, smooth, 10 per cent above soil; core small, very good colour; crop very good. [48]

ST. VALERY. (Sent by Messrs. Vilmorin-Andrieux S.A., 4 Quai de la Mégisserie, Paris, France.) **A.M.** October 30, 1958. Plant 17 to 20 inches high, vigorous; foliage large, spreading, dark green; root 9 to 10 inches long, 1¾ inches wide, medium to dark red, long, tapering, pointed, very regular, smooth, 5 per cent above soil; core small, medium colour; crop very good. [70]

BLATCHFORD'S STUMP-ROOTED INTERMEDIATE. (Raised by Mr. T. W. Clucas, introduced and sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancs.) **H.C.** October 30, 1958. Plant 17 to 19 inches high, vigorous; foliage fairly large, erect, dark green; root 4½ to 5½ inches long, 2 7/10 inches wide, medium red, half long, stump, regular, smooth, 5 per cent above soil; core small, good colour; crop good. [22]

CHANTENAY ASCO. (Sent by Messrs. Chr. Olsen Ltd., Odense, Denmark.) **H.C.** October 30, 1958. Plant 22 inches high, vigorous; foliage large, erect, dark green; root 5 to 5½ inches long, 2¼ inches wide, medium to dark red, half long, stump, regular, smooth, 5 per cent above soil; core small, medium colour; crop good. [5]

COLMAR CLAUDIA. (Raised, introduced and sent by Messrs. L. Clause S.A., Bretigny-sur-Orge, France.) **H.C.** October 30, 1958. Plant 12 to 18 inches high, vigorous; foliage medium size, erect, dark green; root 6 to 8 inches long, 1½ to 1¾ inches wide, medium red, half long, tapering, pointed, regular, smooth, 10 to 12 per cent above soil; core small, medium colour; crop good. [45]

FLAKKEE IMPROVED. (Sent by Messrs. Jacob Jong Seed Co. Ltd., Noordscharwoude, Holland.) **H.C.** October 30, 1958. Plant 18 to 22 inches high, very vigorous; foliage large, spreading, dark green; root 6 to 7 inches long, 1½ to 1¾ inches wide, medium red, half long, tapering, regular, smooth, 15 per cent above soil; core small, medium colour; crop good. [40]

FLAKKEER IMPROVED. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd.) **H.C.** October 30, 1958. Plant 12 to 15 inches high, vigorous; foliage large, slightly spreading, dark green; root 7 to 8 inches long, 1½ inches wide, medium red, half long, tapering, regular, smooth, 15 per cent above soil; core small, good colour; crop good. [41]

FLAKKEER IMPROVED. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke, Copenhagen, Denmark.) **H.C.** October 30, 1958. Plant 15 inches high, vigorous; foliage large, spreading, dark green; root 7 inches long, 1¾ to 2 inches wide, light to medium red, half long, tapering, regular, smooth, 15 per cent above soil; core small, medium colour; crop good. [42]

IMPERATOR IMPROVED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd., 26/29 Drury Lane, Covent Garden, London, W.C.2.) **H.C.** October 30, 1958. Plant 19 to 21 inches high, vigorous; foliage medium size, spreading, dark green; root 7½ to 8½ inches long, 1¼ inches wide, medium to dark red, long, tapering, pointed, regular, smooth, 5 per cent above soil; core small, medium colour; crop good. [65]

JAMES HALF LONG. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke.) **H.C.** October 30, 1958. Plant 19 inches high, vigorous; foliage fairly large, erect, dark green; root 6 inches long, 1½ to 1½ inches wide, medium red, half long, tapering, pointed, regular, smooth, 3 to 4 per cent above soil; core fairly small, little colour; crop good. [30]

PALAISEAU. (Sent by Messrs. Vilmorin-Andrieux S.A.) **H.C.** October 30, 1958. Plant 16 inches high, fairly vigorous; foliage small, slightly spreading, medium to dark green; root 7 inches long, 1½ to 1¾ inches wide,

medium red, half long, cylindrical, regular, smooth, 12 per cent above soil; core small, medium colour; crop good. [25]

RED CORED CHANTENAY. (Raised, introduced and sent by Messrs. Ferry-Morse Seed Co., Mountain View, California, U.S.A.) **H.C.** October 30, 1958. Plant 21 inches high, vigorous; foliage medium size, slightly spreading, dark green; root 5 inches long, 1½ to 2 inches wide, medium to dark red; half long, stump, regular, smooth, 5 per cent above soil; core small, good colour; crop good. [11]

REGULUS. (Raised at the Weibullsholm Plant Breeding Institute, Landskrona, Sweden, introduced and sent by Messrs. W. Weibull A.B., Landskrona, Sweden.) **H.C.** October 30, 1958. Plant 16 to 18 inches high, vigorous; foliage large, spreading, dark green; root 6½ to 8 inches long, 1¾ inches wide, medium red, long, tapering, regular, smooth, 15 to 18 per cent above soil; core small, medium colour; crop good. [58]

SUTTON'S FAVOURITE. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd., Reading, Berks.) **H.C.** October 30, 1958. Plant 21 to 24 inches high, vigorous; leaves large, slightly spreading, dark green; root 5 to 6 inches long, 2$\frac{1}{10}$ inches wide, medium to dark red, half long, stump, regular, smooth, 7 per cent above soil, core small, medium colour; crop good. [13]

OUTDOOR TOMATOES

Seventy-one stocks of outdoor tomatoes were received for trial at Wisley in 1958. The seed was sown under glass on March 20, 1958, and the resulting seedlings were potted on into 3-inch pots on March 31, 1958. Twelve plants of each stock were planted in the open on May 27, 1958, in rows 3 feet apart, the plants being spaced 18 inches apart in the rows. Each plant was supported with a cleft chestnut stake, and three-ply fillis was used for tying. Three stocks of bush tomatoes were included in the trial and these were planted in rows 4 feet apart, the plants being spaced 3½ feet apart in the rows. The bush varieties were mulched with clean wheat straw to prevent the fruits becoming soiled and the crop was not supported in any way.

The land was single dug during the winter of 1957–58, incorporating a dressing of well-rotted farmyard manure. A base dressing of fertilizer was given at the rate of 2 cwt. per acre of hoof meal, 2 cwt. per acre of bonemeal, and 1 cwt. per acre of sulphate of potash.

The plants were sprayed with a colloidal copper spray on July 30 and August 12, as a precaution against the potato blight fungus (*Phytophthora infestans*). Each plant was stopped after the fifth truss during the first week of August; the lower leaves up to the bottom truss being removed at the same time. The stocks of bush tomatoes were not stopped or defoliated.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on September 3, 1958, and on its recommendation the Council has made the following awards to tomatoes as varieties suitable for cultivation in the open.

The number in brackets after the description of the stock is that under which it was grown in the trial.

AILSA CRAIG. (Raised and introduced by Mr. A. Balch, Springfield Farm, Forres, Scotland, sent by Messrs. Hurst & Son Ltd., Kelvedon House, 60/64 Artillery Lane, London, E. 1.) **A.M.** September 3, 1958. Plant 2½ to 3 feet high, vigorous, short jointed; stems stout, dark green; leaves large,

plentiful, dark green. Trusses forked and branched, averaging 12 to 16 fruits. Fruits 2 inches diameter, red, round, very regular, not corrugated, two-celled; flesh firm and thick. Crop fairly good, first ripe fruits picked August 19. [56]

AMATEUR RESELECTED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd., 26/29 Drury Lane, Covent Garden, London, W.C.2.) **A.M.** September 3, 1958. A bush variety. Plant 12 to 16 inches high, 3½ feet spread, vigorous, long jointed; stems medium thickness, dark green; leaves medium size, plentiful, light to medium green. Trusses simple forked and a few branched, producing 28 per plant with an average of 4 to 5 fruits. Fruits 2 to 2½ inches diameter, red, round and flattened, very slightly corrugated, two-celled; flesh firm and thick. Crop very good, first ripe fruits picked August 6. [1]

DONOR. (Raised, introduced and sent by Mr. J. P. Rood, Herenstraat 11, Wateringen, Holland.) **A.M.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, medium to dark green; leaves medium size, plentiful, dark green. Trusses simple forked and branched, averaging 9 to 12 fruits. Fruits 2 to 2½ inches diameter, red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 11. [27]

HERTFORD CROSS. (Raised at The John Innes Horticultural Institution, Bayfordbury, Herts., by Mr. M. B. Crane, F.R.S., A.L.S., V.M.H., and sent by Messrs. Elsoms (Spalding) Ltd., Elsom House, Spalding, Lincs.) **A.M.** September 3, 1958. Plant 3 feet high, vigorous, short jointed; stems stout, dark green; leaves medium size, plentiful, very dark green. Trusses simple, averaging 9 to 10 fruits. Fruits 2 to 2½ inches diameter, bright red, round and slightly flattened, regular, not corrugated, two-celled; flesh firm and thick. Crop very good, first ripe fruits picked August 11. [41]

HUNDREDFOLD, THORPE'S SELECTION. (Raised by Mr. R. Thorpe, introduced and sent by Messrs. J. Thorpe & Sons, The Nurseries, Banbury Road, Brackley, Northants.) **A.M.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, medium to dark green; leaves medium size, fairly plentiful, dark green. Trusses simple and slightly branched, averaging 8 to 10 fruits. Fruits 2 inches diameter, bright red, round, regular, not corrugated, two-celled; flesh fairly firm and thick. Crop very good, first ripe fruits picked August 6. [23]

MONEYMAKER. (Raised and introduced by the late Mr. F. Stonor, sent by Messrs. Hurst & Son Ltd.) **A.M.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, medium to dark green; leaves medium size, plentiful, dark green. Trusses simple, averaging 7 to 10 fruits. Fruits 1¾ to 2½ inches diameter, bright red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 19. [25]

RED GIFT. (Raised, introduced and sent by Messrs. G. R. Vatter AG., Bärenplatz 2, Berne, Switzerland.) **A.M.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, dark green; leaves large, very plentiful, very dark green. Trusses simple, averaging 10 to 11 fruits. Fruits 2 to 2½ inches diameter, red, round, regular, not corrugated, two-celled; flesh fairly firm and thick. Crop very good, first ripe fruits picked August 15. [17]

STONOR'S MONEYMAKER RESELECTED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** September 3, 1958.

Plant 2½ to 3 feet high, vigorous, short jointed; stems stout, medium to dark green; leaves medium size, plentiful, dark green. Trusses simple, averaging 10 to 12 fruits. Fruits 1¾ to 2 inches diameter, bright red, round, regular, not corrugated, two-celled; flesh fairly firm and thick. Crop good, first ripe fruits picked August 15. [24]

SUTTON'S LEADER. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd., Reading, Berks.) **A.M.** September 3, 1958. Plant 3½ to 4 feet high, vigorous, short jointed; stems stout, dark green; leaves fairly large, plentiful, dark green. Trusses simple and forked, averaging 8 to 11 fruits. Fruits 2 inches diameter, bright red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 11. [14]

UNIC. (Raised by Mr. J. Bruinsma, introduced by Messrs. Harrison & Sons (Leicester) Ltd., St. James' Street, Leicester, sent by Messrs. Bruinsma's Selectiebedrijf, Middelbroekweg 10, Naaldwijk, Holland.) **A.M.** September 3, 1958. Plant 2 feet high, vigorous, short jointed; stems stout, medium green; leaves medium size, plentiful, dark green. Trusses simple, averaging 7 to 10 fruits. Fruits 2 to 2½ inches diameter, red, round and slightly flattened, regular, not corrugated, two-celled; flesh firm and thick. Crop very good, first ripe fruits picked August 6. [43]

WARE CROSS. (Raised at The John Innes Horticultural Institution by Mr. M. B. Crane, F.R.S., A.L.S., V.M.H., and sent by Messrs. Elsoms (Spalding) Ltd.) **A.M.** September 3, 1958. Plant 3 feet high, vigorous, short jointed; stems stout, medium to dark green; leaves medium size, plentiful, very dark green. Trusses simple, averaging 10 to 11 fruits. Fruits 2 to 2½ inches diameter, bright red, round and slightly flattened, regular, not corrugated, two-celled; flesh firm and thick. Crop very good, first ripe fruits picked August 11. [42]

WESTLANDIA. (Raised, introduced and sent by Messrs. Gebr. van den Berg N.V., Naaldwijk, Holland.) **A.M.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, dark green; leaves large, plentiful, dark green. Trusses simple and branched, averaging 11 to 14 fruits. Fruits 2 to 2½ inches diameter, red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 11. [64]

AMBITION. (Raised and introduced by Messrs. Woodward's Seeds Ltd., sent by Messrs. Hurst & Son Ltd.) **H.C.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, medium to dark green; leaves large, plentiful, dark green. Trusses forked and branched, averaging 8 to 10 fruits. Fruits 1¾ to 2½ inches diameter, bright red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop fairly good, first ripe fruits picked August 6. [65]

BERTHA. (Raised, introduced and sent by Mr. J. P. Rood.) **H.C.** September 3, 1958. Plant 2 feet high, vigorous, short jointed; stems stout, dark green; leaves medium size, few, dark green. Trusses simple, averaging 4 to 5 fruits. Fruits 2½ inches diameter, bright red, slightly plum-shaped, regular, not corrugated, four-celled; flesh fairly firm and thick. Crop fairly good, first ripe fruits picked August 11. [9]

DAFFURN'S SEEDLING. (Raised and sent by Mr. A. S. Daffurn, Childwick Bury Gardens, St. Albans, Herts.) **H.C.** September 3, 1958. Plant 3 to 4 feet high, very vigorous, short jointed; stems stout, dark green; leaves large, plentiful, very dark green. Trusses simple, averaging 11 to 16 fruits. Fruits 1¾ to 2 inches diameter, red, round, regular, not corru-

gated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 19. [60]

FELTHAM PRIDE. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** September 3, 1958. Plant 2½ to 3 feet high, vigorous, short jointed; stems medium thickness, medium to dark green; leaves medium size, plentiful, dark green. Trusses simple and forked, averaging 9 to 12 fruits. Fruits 1½ to 2 inches diameter, red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 11. [37]

HARBINGER RESELECTED. (Raised and introduced by Messrs. Sutton & Sons Ltd., sent by Messrs. A. L. Tozer Ltd., Pyports, Church Street, Cobham, Surrey.) **H.C.** September 3, 1958. Plants 3½ to 4 feet high, vigorous, fairly short jointed; stems stout, dark green; leaves large, plentiful, dark green. Trusses simple and forked, averaging 11 to 13 fruits. Fruits 1¾ to 2 inches diameter, bright red, round, regular, not corrugated, two-celled; flesh fairly firm and thick. Crop good, first ripe fruits picked August 6. [13]

HUNDREDFOLD RESELECTED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** September 3, 1958. Plant 3½ to 4 feet high, vigorous, short jointed; stems stout, medium green; leaves medium size, fairly plentiful, dark green. Trusses simple forked and branched, averaging 11 to 13 fruits. Fruits 2 inches diameter, very bright red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 11. [20]

IMPROVED QUALITY. (Raised, introduced and sent by Mr. F. Fleetwood-Paul, Meadowland, Curdridge, nr. Southampton.) **H.C.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, medium to dark green; leaves large, plentiful, very dark green. Trusses simple and forked, averaging 11 to 16 fruits. Fruits 2 to 2½ inches diameter, red, round, regular, not corrugated, two-celled; flesh fairly firm and thick. Crop fairly good, first ripe fruits picked August 19. [46]

MARKET KING RESELECTED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** September 3, 1958. Plant 3½ to 4 feet high, vigorous, short jointed; stems stout, medium to dark green; leaves large, plentiful, very dark green. Trusses simple, averaging 9 to 11 fruits. Fruits 2 inches diameter, red, slightly flat, regular, not corrugated, two-celled; flesh firm and thick. Crop very good, first ripe fruits picked August 15. [18]

MONEYMAKER SELECTED. (Raised, introduced and sent by Messrs. Harrison & Sons (Leicester) Ltd.) **H.C.** September 3, 1958. Plant 2½ feet high, vigorous, short jointed; stems stout, medium green. Leaves medium size, plentiful, dark green. Trusses simple forked and branched, averaging 8 to 12 fruits. Fruits 2 to 2½ inches diameter, bright red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 23. [26]

PYGMY. (Raised, introduced and sent by Mr. J. P. Rood.) **H.C.** September 3, 1958. Plant 1½ to 2 feet high, vigorous, short jointed; stems medium thickness, dark green; leaves large, very few, medium to dark green. Trusses simple, averaging 6 to 8 fruits. Fruits 1½ to 2 inches diameter, red, very slightly plum-shaped to round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 11. [28]

STONOR'S M.P. SELECTED. (Raised, introduced and sent by

Messrs. Watkins & Simpson Ltd.) **H.C.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, medium green; leaves medium size, plentiful, dark green. Trusses simple and forked, averaging 8 to 11 fruits. Fruits 1¾ to 2 inches diameter, red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop good, first ripe fruits picked August 11. [31]

STONOR'S PROGRESS IMPROVED. (Raised, introduced and sent by Mr. R. E. Thoday, 18 Madingley Road, Cambridge.) **H.C.** September 3, 1958. Plant 3 to 3½ feet high, vigorous, short jointed; stems stout, medium green; leaves medium size, plentiful, dark green. Trusses simple and forked, averaging 8 to 9 fruits. Fruits 2 to 2½ inches diameter, bright red, round, regular, not corrugated, two-celled; flesh firm and thick. Crop fairly good, first ripe fruits picked August 19. [33]

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1958 AND 1959

Dianthus 'Welcome' A.M. May 19, 1958, as a variety for exhibition purposes. Flower stems long, rigid; flowers 2½ inches diameter, double, centre full, scent good; broad petals, waved and slightly serrated, Rose Red (H.C.C. 724). Exhibited by Messrs. Lindabruce Nurseries Ltd., Lancing, Sussex.

Fuchsia 'Prodigy' A.M. September 2, 1958. The medium-sized flowers with corollas of Aconite Violet (H.C.C. 937/2) changing to Dianthus Purple (H.C.C. 730), and sepals of Turkey Red (H.C.C. 721/2), are borne with great freedom in graceful arching sprays. It is claimed that this variety has never suffered from frost in a cold part of Surrey, except to be cut down to the ground every winter. Even in poor sandy soil it makes up to 4 feet of growth annually. Shown by Messrs. Sunningdale Nurseries, Windlesham, Surrey.

Iris unguicularis 'Walter Butt' A.M. January 27, 1959. An attractive cultivar of the familiar winter-flowering iris, which bears silvery violet flowers (H.C.C. shades of Veronica Violet, 6 39/2) up to 4 inches across. Exhibited by Sir John Amory, Knightshayes Court, Tiverton, Devon.

Mahonia 'Charity' A.M. January 27, 1959. A cross between *M. lomariifolia* and *M. japonica*, this excellent evergreen *Mahonia* has stiff leaves about 2 feet long, bearing twenty-one narrowly ovate, sinuate-serrate leaflets up to 4 inches long, dark green above and paler green beneath. The sweetly scented flowers are borne terminally, in dense spreading racemes about 12 inches long; the individual flowers are about ½ inch across and are Empire Yellow (H.C.C. 6 03) in colour. Exhibited by The Crown Estate Commissioners, The Great Park, Windsor, Berks.

Rondeletia roezlii A.M. February 10, 1959. A native of Guatemala, this shrub or small tree is best grown in the intermediate house.

The large, opposite, slightly rugose leaves are up to 7 inches long, ovate, acuminate, subcordate to truncate and softly hairy on the underside. The small, white flowers, flushed pink in the bud and at the base of the corolla tube, are salver-shaped and up to ¼ inch across, the corolla tube being about ⅛ inch long, with five spreading lobes. They are borne in pendulous, many-flowered panicles, about 10 inches long and 5 inches across. Exhibited by L. Maurice Mason, Esq., Talbot Manor, Fincham, King's Lynn, Norfolk.

ORCHIDS

Odontoglossum (Quistrium g.) 'Lyoth Angelo' F.C.C. January 21, 1958. A fine cultivar obtained by crossing *O.* 'Nubia' and *O.* 'Prescatorei'. The plant bore an erect spike of ten fully developed flowers, individual flowers being 3½ by 3 inches. The basic colour is white with faint rose suffusion, upon this background is superimposed a few distinct purple blotches. The undulated labellum is marked with lemon-yellow towards the base and one butterfly-shaped blotch. Exhibited by Messrs. Charlesworth & Co., Ltd., Orchid Nurseries, Haywards Heath, Sussex.

× **Odontioda (Ruby Glow g.) 'Stonehurst' F.C.C.** March 4, 1958. The parents of this cultivar are *O.* 'Frances' and *Odontoglossum* 'Gorizia'. This handsome Odontioda first gained the Award of Merit in 1954. The well-grown plant produced a spike of nine well-developed flowers, each measuring 3½ inches across. The general colouring was rich ruby wine with a few speckled markings. The edges and tips of the dorsal and laterals are of a pale rose colouring. The handsome wavy labellum was of a similar colour to that of the tepals, with whitish markings near the margin, and a distinctive pure white undulated base. Exhibited by R. Strauss, Esq., Stonehurst, Ardingly, Sussex.

Cypripedium (Bushey g.) 'Banbury' A.M. February 4, 1958. *C.* 'Chardmoore' and *C.* 'Denehurst' are the parents of this large cultivar. The laterals are slightly incurved with wavy margins, yellowish-green in colour, with the upper portion overlaid with a light brown-purple. The large dorsal tepal was white with a yellowish-green crescent fading into the white ground, and a few scattered small purple-coloured spots. The labellum brownish-purple and yellow in colour. The size of the flower was 7 inches by 5¾ inches. Exhibited by L. W. Brummitt, Esq., 30 Bloxham Road, Banbury, Oxon.

Cypripedium (Challow g.) 'Chilton' A.M. January 9, 1958. This cultivar was produced by crossing *C.* 'Radley' and *C.* 'Viking'. The dorsal sepal was erect, flat with white ground, overlaid with brownish-purple in central area with traces of yellowish-green fading into the white ground. Petals 1¾ inches wide, greenish-yellow colour, overlaid with brownish-purple on the upper half; impressive mid-rib, rich purple, while the lower parts are lightly spotted with purple. The labellum greenish-yellow with slight brown around the tip, side lobes

incurved leaving the column fully exposed. Exhibited by Messrs. R. and E. Ratcliffe, Downlands Nursery, Chilton, Didcot, Berks.

Cypripedium (Hymettus g.) 'Rowland' A.M. February 4, 1958. This well-balanced flower was produced by crossing *C.* 'Minster Lovell' and *C.* 'Honey Dew'. Flower measurements, 4¾ inches by 4¼ inches lateral tepals 2 inches wide. The dorsal tepal has a central area of pea-green, suffusing into the white margin; lateral tepals and labellum yellow-green in colour. The wavy tepals added beauty to this perfect-shaped cypripedium. Exhibited by A. N. Rowland, Esq., 25 All Saints Road, Weston-super-Mare.

Cypripedium (Julia Mash g.) 'Autumn' A.M. January 9, 1958. The flower of this cultivar is 5½ inches by 4½ inches. The parentage is *C.* 'Maginot' and *C.* 'Ann Harper'. The laterals and dorsal tepals are slightly incurved. Dorsal tepal white, central area pea-green fading to yellow, with a number of purplish-brown spots. The laterals and labellum are yellowish-green in colour overlaid with light brown; lateral tepals ivory with a distinct purple mid-rib. Exhibited and raised by Messrs. Black and Flory Ltd., Slough, Bucks.

Cypripedium (Peregrine g.) 'Invicta' A.M. January 9, 1958. *C.* 'Sophelia' and *C.* 'Moreton Bay' are the parents of this fine plant. The flower of this cultivar is 4¾ inches by 3¾ inches. The fine fleshy dorsal sepal was white with a yellowish-green centre crescent; petals 2 inches wide, primrose-yellow in colour with green venation. The labellum glossy, perfect shape, upper lobes curving inwards, colour similar to the petals, the small greenish ventral sepal was well hidden. Exhibited by Messrs. Stuart Low (Benenden) Ltd., Jarvis Brook, Crowborough, Sussex.

Lycaste (Betty Sparrow g.) 'Amber Glow' A.M. March 18, 1958. This cultivar arose as a result of crossing *L.* 'Brugense' and *L.* 'Marobulbon'. The plant exhibited carried one fully developed flower and two buds. The bloom, 4½ inches wide, was greenish-yellow in colour, crest rich orange, column whitish with a purple spot at the base. The outer three tepals formed a triangle with recurved apices. The inner tepals are incurved thus forming a hood over the column. Exhibited by G. M. Sparrow, Esq., Peters Oak, Blackmore End, near Wheathampstead.

× **Odontioda (Favour g.) 'The Premier' A.M.** February 18, 1958. The striking flowers of this cultivar were obtained by crossing *O.* 'Vivienne' and *O.* 'Faygate'. The individual flowers were 3½ inches by 3¼ inches; tepals had deeply serrated edges 1½ inches wide, while the apices are recurved. The dorsal and laterals are reddish-purple with lighter spots, and whitish margins. The labellum has a small yellow crest, with an underlay of reddish-purple, surrounded by a white outer band, thus adding beauty to the flower. Exhibited by Messrs. Stuart Low (Benenden) Ltd., Jarvis Brook, Crowborough, Sussex.

× **Odontioda (Fred Bradley g.) 'Lyoth Superb' A.M.** March 18, 1958. The parents are *O.* 'Pola' and *O.* 'E. G. Ellwood'. The flower

colouring is deep carmine, with reddish blotches on each tepal surrounded with irregular lines of pale rose thus creating a delightful design. The yellowish-white labellum had a large reddish blotch in the centre surrounded by a series of small lines and a jagged yellow crest on the upper part. Exhibited by J. Moulson, Esq., 30 Horton Green, Bradford.

× **Odontioda (Marispum g.) 'Lyoth Princess' A.M.** April 1, 1958. This Odontioda was obtained by crossing *O.* 'Marie Antoinette' and *Odontoglossum crispum*. The plant produced a spike of five well-spaced flowers, and each flower was 3¾ inches by 3¾ inches. The general colour is rosy-mauve with reddish-brown markings. The tepals of the inner whorl are incised and undulated at the margins, speckled reddish-brown on white ground in the centre area. The labellum undulated, white with a distinctive brownish blotch below the golden yellow crest. Exhibited by Messrs. Charlesworth & Co., Ltd., Haywards Heath, Sussex.

Odontoglossum (Manperor g.) 'Jewel' A.M. March 4, 1958. This cultivar is the result of crossing *O.* 'Manperor' and *O.* 'Purple Emperor'. This plant received a preliminary commendation award in 1951. The individual flowers measured 4 inches by 3¾ inches with a tepal width of 2 inches, thus indicating the size of these well-developed flowers. The tepals are attractively scalloped at the margins and covered with large blotches of purple over a white background thus creating an attractive effect. The labellum has a yellow crest and a large white area, part of which is dotted with purple. Exhibited by R. Strauss, Esq., Stonehurst, Ardingly, Sussex.

Odontoglossum (Pacific g.) 'Lyoth Mikado' A.M. January 21, 1958. This good yellow-flowered hybrid was obtained by crossing *O.* 'Crispinum' and *O.* 'Ascania'. The plant bore a spike of eight well-spaced flowers each 3½ inches broad. The tepals fringed at the edges, primrose-yellow with whitish markings towards the base, and isolated purple spots. The labellum is lacerated, yellowish white in colour, with a few purple spots. Exhibited by Messrs. Charlesworth & Co., Ltd., Orchid Nurseries, Haywards Heath, Sussex.

Phalaenopsis (Jos Pueblos g.) 'Roke' A.M. March 18, 1958. The parentage of this fine cultivar is *P.* 'Grace John' and *P.* 'Doris'. The plant shown had a pendulous spike bearing five flowers each measuring 4 inches across, tepals 2½ inches wide. The colour is clear white with a flush of yellow on the lip and side lobes, and horizontal red lines in the throat. Exhibited by R. T. Waring, Esq., Round Close, Sandy Lane, Cobham. Surrey.

FELLOWS WISHING TO OBTAIN PLANTS RARE IN CULTIVATION

IN response to the notice published on assistance in obtaining plants rare in cultivation, on page 4 of the January issue of the JOURNAL, the following requests are published. Will any fellow who is willing to offer one of these plants please communicate direct with the Fellow who is seeking it and *not* with the Editor.

Hosta fortunei albo-picta. Hemerocallis 'Patricia Fay' & 'Alan'	Mrs. M. Kennedy, Inverurr, Kippford, by Dalbeattie, Kircudbrightshire.
Boronia megastigma	Mrs. J. P. Ramsey, The Hermitage, 2 Wardie Crescent, Edinburgh, 5.
Sphacele chamaedryoides, Tchihatchewia sp.	Mrs. A. A. McConnell, Conna, Shankill, Co. Dublin.
Lupin ornatus	Mrs. Wilfrid Bronlow, Ettington Grange, Stratford-upon-Avon.
Rose 'Fiesta' (American patent 389), *Lapageria rosea albiflora*	Miss Ffennell, Martyr Worthy Minor, Nr. Winchester.
Dwarf Moss Rose 'Mouselline'	Mrs. Maxwell, Boscobel, Robertsbridge, Sussex.
'Mrs. Sinkins' Pinks (genuine)	Mrs. Bell-Irving, White Hill, Lockerbie, Scotland.
Hardy Tea Roses, Rose 'La Reine', Rheum, red-flowered, any, *Rodgersia pinnata superba* and others, *Kirengeshoma palmata*, *Veratrum nigrum* and other spp., *Hosta crispula* (broad leaf, edged white), *Hosta plantaginea* (green leaf, scented white flower in October), *Helleborus orientalis* (*kochii*) (pale yellow), *Melianthus major*; Seeds of *Melianthus major*, *Kniphofia northiae* *Genista cinerea*	Sunningale Nurseries, Windlesham, Surrey.
Rhododendron headfortianum	Paul J. Bowman, M.D., 160 Brandon Way, Fort Bragg, California, U.S.A.
Tropaeolum polyphyllum	A. J. Maledy, 7 Park Road, Yapton, Arundel, Sussex.
Gentiana depressa	Dr. A. W. Taylor, Mount Pleasant, Lamberhurst, Kent.
Rose 'Marie Celeste'	Miss Diana M. Thornton, Achmore, Woolston, Williton, Somerset.
Kalmiopsis leachiana	Miss D. B. Latham, Badworthy Cottage, South Brent, Devon.

Iris paradoxa, *Tecophilaea cyanocrocus* (seed)	K. T. Cartwright, The Old Vicarage, Towersey, Thame, Oxon.
Cantua buxifolia, *Reinwardtia trigyna*, *Daedalacanthus nervosus*, *Hibbertia dentata*	Miss J. I. Firth, Hazel Hill, Hambledon Road, Nr. Godalming, Surrey.
Nepeta 'Paul Chandon' (Lavender blue, *Penstemon lyallii*, *Cypripedium cordigerum*	Miss P. F. Day, Redcot, Haslemere, Surrey.
Dipladenia spp., Bougainvillea vars.	V. Wright, P.O. Box 512, Bulawayo, Southern Rhodesia.
Lupinus excubicus hallii (*paynei*)	Mrs. C. E. G. Devonshire, Upper Cottage, Abbots Ann, Andover.
Viola odorata 'Irish Elegance'	Mrs. R. Lloyd Jones, Newbridge Cottage, Coleman's Hatch, Hartfield, Sussex.
Narcissus tazetta, 'Jaune à Merveille'	Miss Brenhilda Schafer, Cattawade, Manningtree, Essex.
Aporocactus martianus, *Malacocarpus sellowii* var. *martinii*, *Mammillaria martinezii*	R. J. Martin, 25 Walden Way, Frinton on Sea, Essex.
Digitalis obscura	G. M. Marker, Yondercott, Uffculme, Devon.
Persea borbonia, *Philodendron amurense*, *Chordospartium stevensonii*, *Pterostyrax hispida*, *Pterocarya fraxinifolia*	Ross Young, Superintendent of Parks and Pleasure Gardens, Avenue Road, Bournemouth.
Primula cortusoides	W. T. Pain, "The Lilacs", 43 Western Road, Romford, Essex.
Anemone obtusiloba var. *patula*	Mrs. Gidney, The Red House, Marlborough, Wilts.
Narcissus hybrids: 'Ambergate', 'Taroona', 'Pink of Dawn', 'Tidd-Pratt' and 'Dawn Glow'	E. Longbottom, 61 Compton Crescent, Leeds, 9, Yorks.
Poinsettia 'Ecke White'	Mrs. D. H. Thompson, South Lodge, East Boldon, Co. Durham.
Hoya cinnamomifolia, *coriacea*, *linearis*, *multiflora*	A. R. Wills Ltd., Tadburn Nursery, Romsey, Hants.

BOOK NOTES

"The Book of the Garden Pond." By George F. Hervey and Jack Hems. Demy 8vo. 192 pp. Illus. (Stanley Paul.) 16*s*.

The authors of this book are both well known aquarists with national reputations. Their previous works include *The Goldfish* and *Freshwater Tropical Aquarium Fish*, both by The Butterworth Press, London (1948 and 1952), with the present volume intended to complete a trilogy on matters aquatic.

The history of the garden pond, together with chapters on its construction and maintenance, and descriptions of plants to clothe the water surface, and grow beneath it as well as fringe its shores, are all included in a work of some 192 pages. Nor is the background forgotten, for the authors are looking at the garden as a whole, and have included notes on the care and planting of alpines and rock plants, also shrubs and

trees, insectivorous plants and even lilies. Nearly a third of the book, however, is devoted to livestock in a pond, and it is here that the authors seem most at home. These chapters are small masterpieces, well written and highly practical.

From a horticultural point of view, however, there must be some disappointment. Delightfully written in a chatty, interesting way, with plenty of historical notes and references, yet the practical details are not always sound and in some cases the book is out of date. Thus it would be interesting to learn where Nymphaeas 'Tove' and 'Princess Elizabeth', both recommended for pond planting could be obtained today. Also, it is questionable whether *Egeria densa* should be advised for an outside pool. It is certainly not hardy in the Enfield area.

On p. 59 is a suggestion that plants with a bulbous rootstock, e.g. *Calla* ? (which is rhizomatous), should be planted in *late autumn*. This is certainly not to be recommended as a general practice, for in a cold wet winter the fleshy rootstocks are apt to rot before making anchorage roots. Spring planting is safer, for then there is no check to growth.

With reference to the control of insects and algae the authors rightly condemn the use of chemicals and insecticides. A garden pond contains a relatively small amount of water and its nature is quickly changed by even minute quantities of poison. Old, still slightly acid water creates clear, well balanced conditions and since this is the aim of all gardeners, it is not wise to risk changing it.

The book is well set out and illustrated with both diagrams and photographs. Nomenclature and spelling are very good (*Aponogeton distachyus* is wrongly spelt opposite p. 81) and it is, moreover, a very readable book. The first chapter on the History of the Garden Pond is delightful and constituted for the reviewer the most interesting part of the book.

FRANCES PERRY

"List of British Vascular Plants." By J. E. Dandy. Demy 8vo. 176 pp. (British Museum (Natural History) and the Botanical Society of the British Isles.) 10*s*.

In his foreword to this list compiled by the Keeper of Botany at the British Museum (Natural History), Dr. G. Taylor, the Director of the Royal Botanic Gardens, Kew, writes, " . . . the publication of this list is a remarkable and astounding achievement" and your reviewer cannot do better than to echo his words. It is substantially a new list, although in it have been merged such material as Mr. Dandy thought fit from three previous lists, the *British Plant List of the Botanical Society of the British Isles*, the *London Catalogue of British Plants* and the *List of British Seed-plants and Ferns of the British Museum*. In an extremely interesting and helpful Introduction Mr. Dandy discusses the scope and arrangement of the list and it is noteworthy that he can write, "British botanists have at last begun to take an interest in the precision and correctness of the names they use". One hopes that this may come to mean to a greater extent their stability as well, although this word is not specifically mentioned. The total of species included is 2,895, considerably fewer than in Druce's *British Plant List*, and of this number 1,511 are given as orthodox native species, 688 as additional microspecies and 62 as additional subspecies, while 654 aliens are listed. The microspecies, which include large numbers of the genera *Hieracium* and *Rubus*, are distinguished typographically. Critical readers will also notice a number of changes of taxonomic interest, such as the transfer of *Allium* from *Liliaceae* to *Amaryllidaceae* and the separation of *Cypripedium* into a family separate from *Orchidaceae*, namely, *Cypripediceae*. We may be assured, however, that no changes have been made without very careful consideration and should be very grateful for the considerable amount of labour, on the part of Mr. Dandy and his chief assistants, that must have gone into the preparation of this list.

PATRICK M. SYNGE

"Cytology and Cytogenetics." By Carl P. Swanson. (Macmillan & Co. Ltd., London.) 1958. 596 pp. 45*s*. net.

Most of us live our lives surrounded by objects we can see quite well with our eyes—or with them aided by National Health spectacles. Occasionally we read or hear of the marvels of astronomical space measured in light years or are perplexed by statements regarding electrons, protons, neutrons and the like. As horticulturists or botanists the objects we have now to contemplate range in size from giant trees and

forests of these to chromosomes and their make up. The study of the cells of animals and plants is known as cytology but a very high proportion of modern cytology is concerned not with cells as wholes but with their nuclei, or is even limited to a study of the nuclear constituents termed chromosomes. In other words, karyology is a more precise term than cytology for much modern biological research at this level. This is true of the book here under notice, since fifteen of the eighteen chapters deal almost entirely, directly or indirectly, with the structure and behaviour of chromosomes. There is now no doubt that the chromosomes are of the utmost importance in the study of heredity and, therefore, in plant breeding. The advent of new techniques, such as the electron microscope, the amount of research work on chromosomes being carried out in all parts of the world, and the enormous number of papers published annually in a very large number of scientific journals, justify the publication of new text-books at fairly frequent intervals.

The author of this present work is described on the title-page as "William D. Gill Professor of Biology, The Johns Hopkins University", and on the dust cover as "Professor of Botany" in the same university. He deals in detail with the chromosome theory of inheritance and the "normal" and "abnormal" structure and behaviour of chromosomes in plants and animals. The accounts are of an advanced character and include summaries of a high proportion of very recent researches. This is not an introduction to either cytology or cytogenetics and its importance for many plant-breeders will be mainly as a work of reference. An outline of the contents can be obtained by noting some of the chapter headings, which include: the function of the chromosome, chromosome structure, variations in chromosome structure and number, chromosome movement, crossing over and chiasma formation, variations in chromosome behaviour, the chemistry of nuclei and chromosomes, chromosomes and genes, and evolution of the karyotype, as well as chapters dealing with aberrations, some of which are common and important. There is a long list of references and a good index.

It is particularly interesting to have concise accounts of some very modern developments and also to realize that some viewpoints have been too dogmatically asserted in the not very distant past. Thus, "a note of caution, however, has recently been injected into the discussions revolving around cytoplasmic inheritance" and the absence of definite proof of the existence of plasmagenes is linked with the suggestion that "the distinction between plasmagenes and cytoplasmic viruses is a matter of definition". Or, again, recent observational and especially experimental investigation is in favour of some sort of nucleus-like structure in some bacterial cells with the occurrence of permanent mutations and, since recombinations of these appear, a reproductive process with at least some characteristics of a sexual mechanism. Even for bacteria, however, the full "cytological picture is still in some doubt". More remarkable is the phenomenon of recombination in bacteriophages which are classed with the viruses. Very wisely, the author points out that one must not force the genetic systems operative in bacteria and bacteriophages into the conventional schemes which seem to fit and explain the heredity of maize or *Drosophila*. There appear to be similarities and dissimilarities and it is obvious that, assisted by new research methods and improved tools, exciting discoveries are being made in the genetics of micro-organisms.

It is impossible adequately to review in a limited space a book packed, as is this one, with factual information of a highly technical nature, much of it new, and which discusses many hypotheses some of which have still to be satisfactorily proved or fitted into the general scheme of biology. One has, however, to acknowledge that this is a work that, for the time being, brings a difficult subject up to date between the covers of one book, though the limits of the subject are not precisely expressed in the title.

W. B. TURRILL

"The Travels of William Bartram. Naturalist's Edition." By Francis Harper. 727 pp. Illus. and Maps. (Yale University Press, New Haven; Oxford University Press, London.) 68*s*. in U.K.

This excellent work is the third of a trilogy in which Francis Harper has brought to fruition a plan conceived many years ago with his friend the late Arthur N. Leeds, to bring out annotated editions of the works of the two pioneer Quaker naturalists of Philadelphia, John and William Bartram. We are already indebted to him for John Bartram's "Diary of a Journey through the Carolinas, Georgia and Florida" and William's "Travels in Georgia and Florida, 1773–74; a Report to Dr. John Fothergill" (in *Trans. Amer. phil. Soc.* 1942 and 1943 respectively).

The Bartrams were helped and encouraged by Peter Collinson and later by

Fothergill, sending them in return seeds and living specimens of plants and animals, many of them introduced for the first time, and William's *Travels* achieved literary fame as a kind of classic of the Romantic Period, if such a phrase be admissible, influencing Coleridge and providing some of the elements for *Kubla Khan*.

The present work, an admirable example of American scholarship at its best, elegantly printed by the Yale University Press and beautifully illustrated, reprints the whole of the *Travels*, with the original pagination given, and provides us with a complete commentary and annotated index which, as the subtitle indicates, provides the naturalist with everything he could desire. Harper has re-trodden the itinerary of the *Travels* with painstaking care and obvious enthusiasm and this has added vividness and authenticity to his commentary. Much care has been taken in identifying the plants (of the animals I cannot speak) and the only criticism I would make after a preliminary examination is that no mention is made of the fact that the famous Franklin Tree (*Franklinia alatamaha* Bartr. ex Marsh.) is referred by many authorities (though admittedly not by all) to *Gordonia*, in which genus it becomes *G. alatamaha* (Bartr. ex Marsh.) Sarg. (not *G. pubescens* L'Hérit., a name formerly attributed to it by many authors though not by Harper himself).

The book is very good value, an elegant and indispensable addition to any library and a treasure for bibliophiles.

A. W. EXELL

"Orchid Growing for Everyone." By Karl Matho. 166 pp. Illus. (Blandford Press, 1958.) 25*s*.

The latest book on Orchids is by Karl Matho, one-time orchidist at the Botanical Gardens of Hamburg. The work is as full of detail in its opening chapters as one would expect from a national of that country that has trained so many well-known botanists and travellers. Having had the privilege of translating a portion of this work, I am able to state with fair confidence that it should take its place naturally on the average orchid-grower's bookshelf. Seventy-six pages of excellent and detailed information of general interest are followed by descriptions of thirty-three genera and sixty-four species, which are illustrated in colour in a strangely formalized manner. In spite of the harsh and inaccurate colouring, these Picassian drawings somehow manage to convey the correct picture of the flower. The classification of the Tribes and sub-Tribes is Pfitzer's. As with any translation, let alone one that is technical, the botanical descriptions leave much to be desired. Such pitfalls as "staminode", translated as "columnar disc", or "placenta" as "linear band of the oval sticky mass", clog the reading somewhat. The book, in spite of sixty-four pictures, is not inexpensive.

D. F. SANDER

"Mount Stewart" and "Rowallane." (Northern Ireland Committee of The National Trust.) 2*s*. each.

These two guides to two of the greatest gardens of Northern Ireland should be in the hands of all visitors to that area. Each of the gardens has its own peculiar beauties and distinction, while in both the growth of rare and tender plants is exceptional. The guide to Mount Stewart has been written by the late Edith, Marchioness of Londonderry, who created the larger part of the gardens there. She handed over these to The National Trust and expressed the hope that by so doing she and her daughter Viscountess Bury have done their best to ensure that the garden should be permanently preserved and maintained in the future. Unfortunately Mr. Hugh Armytage Moore did not live to compile his own garden guide and it was after his death that the property was transferred to The National Trust. It is certainly one of the gardens most worthy of preservation of all those it has been my privilege to visit in recent years.

PATRICK M. SYNGE

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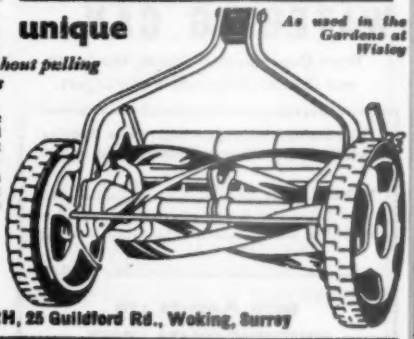

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Controls many important fungus diseases on a wide range of crops. It is especially effective against Black Spot on roses and Scab on apples and pears. It will also control Storage Rots and Bulb and Corm Rots.

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A pinch shaken up in a packet of seeds will protect seeds and seedlings from attacks by soil borne pests and diseases. Its use will increase germination and produce healthier, more vigorous crops.

1/6 per packet
Sufficient for the average garden

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JUNE

In June the magic of midsummer pervades the garden; in the evening the scent of the lilies and the roses seems to be released more strongly, as though the flowers relaxed as gratefully as ourselves to the soft fall of fountains in the cool dusk.

For the gardener this is the culmination of his year. It can also be a test of the integrity of the design of the garden and of the quality which has gone into its workmanship.

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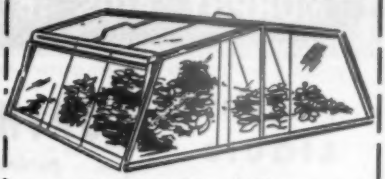

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Both the Pluie Major and Pluie '15' can be raised on a metal base with glass. Ideal for tomatoes and chrysanthemums, also suitable for propagating and raising seedlings and cuttings, heated with soil warmer.

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Our New Introductions for 1959

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EILEEN McBRIDE (Small Decorative)
Lavender pink with creamy base; 3½ ft.

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A lovely rich pink; 4 ft.

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Suffusion of rose with mauve shadings; 3½ ft.

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Glistening white throughout; 3½ ft.

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Bright orange, with a cream base to each petal; 3½ ft.

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Lively pink with apricot base; 3½ ft.

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POT-GROWN PLANTS, ready May-June, 10/6 each

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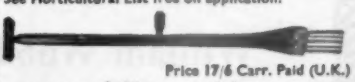

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Fisons Evergreen does both best

If your lawn is patchy or weedy, make it grow thick, green and healthy with one complete treatment — with Fisons Evergreen. For Evergreen is an *exact* balance of all the plant foods that grass needs, plus the *two* most searching selective weedkillers that have ever been made. It does two jobs in one go. Now's the time for Evergreen when both grass and weeds are growing strongest. All you have to do is scatter it evenly over the lawn. **Cartons from 3/11.**

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PLANT FOOD with
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Sold by Seedsmen, Ironmongers, Dept. Stores and Woolworth Stores everywhere.

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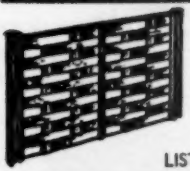

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Makes Greenfly and other Insects kill themselves

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3/6 & 6/-
Economy Sizes
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FOR NON-EDIBLE PLANTS ONLY

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4 ft.	17 6	20 0	30 0	35 0
5 ft.	35 0	40 0	45 0	50 0
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VALE COUNTRY PRODUCTS
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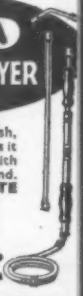
SOLO
Double Action SPRAYER



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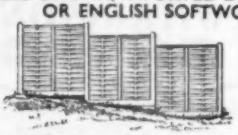

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Write for details and free booklet ★ **FEEDING—use VITA-MURE double-action plant food**

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AIN'T IT GRAND TO BE BLOOMING WELL!

says BOB GREEN, our gardening expert

What a joy it is to see your plants throwing out their chests in the sunshine (or rain) this month, bursting with health and vigour! Aren't you glad now that you used that wonderful pair—Jeypeat Compound and Jeyes' Fluid? Did you ever in your life have crops so clean, so free from pests and disease? Keep it up, lads—little and often, that's the rule of Jeypeat and Jeyes' Fluid!

STOP ROOT PESTS

Carrot Fly, Onion Fly, etc. These pests lay their eggs in the soil and the grubs feed on the roots. To protect your crops, sprinkle Jeypeat Compound lightly along the rows once a fortnight. Always apply Jeypeat after thinning carrots. Jeypeat also affords protection against Cabbage Root Fly, Flea Beetle, Gall Fly, etc.

Death to Slugs and Snails

Slugs and snails are always about. Jeypeat Compound kills them on contact. Protection from these voracious pests consists in sprinkling Jeypeat once a fortnight along the rows or around individual plants.

STOP FOLIAGE PESTS

Keep Green Fly, Black Fly, etc., away by spraying foliage once a week with one TEASPOON of Jeyes' Fluid per gallon of water. This solution, applied before infestation occurs, is such an effective deterrent that these pests avoid plants so protected. Roses especially benefit from this treatment, which also helps to prevent the spread of mildew and other fungus diseases.

Cabbage Butterfly, etc.

The above solution is also a very effective deterrent against caterpillar producing Cabbage Butterfly and Cabbage Aphis. To protect your Brassicas from attack spray the foliage regularly, paying special attention to the undersides of the leaves.

JEYPEAT COMPOUND

—the amazing 3 in 1 soil treatment

Jeypeat consists of finest sedge peat accurately and correctly impregnated with Jeyes' Fluid. In this form the Jeyes' Fluid content stays active much longer than when used in solution—a big advantage for many purposes.

- Jeypeat Compound destroys soil of fungus diseases and whitening pests
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- Jeypeat Compound enriches soil with the humus so essential to fertility and promotes healthier growth

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The best disinfectant on earth

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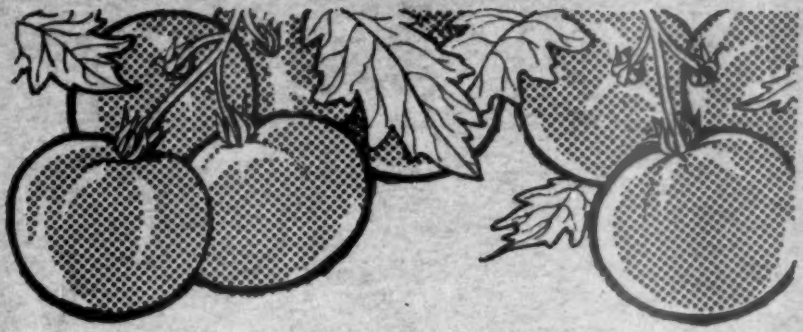
JEYES' CHEPT. DM1, RIVER ROAD, BARKING, ESSEX



HOW TOMATABS IMPROVE THE TOMATO CROP

Tomatabs greatly assist the horticulturist to achieve maximum, high-grade output from his tomato plants. Firstly because of the method of application. Secondly because of the special Tomatab formula.

Tomatabs, being in tablet form, are placed in one simple, speedy operation at the roots of *each* plant. This revolutionary method of individual *plant feeding* ensures a balanced food supply to every plant under cultivation.

The Tomatab formula is scientifically designed to meet the special needs of successful tomato production. It contains an extremely high percentage of both phosphate and potash together with manganese, iron and magnesium. Nitrogen is purposely excluded: copious, undesirable growth is thus avoided and early fruiting greatly encouraged.

Tomatab-fed plants quickly develop into fine, sturdy stock. The plants are short jointed and remarkably disease resistant. They come into fruit much earlier than they otherwise would, yielding an abundant crop of fine texture, medium size tomatoes. These are always sweet, juicy and full in flavour. The colour is excellent.

Tomatabs are available in packets of 144 tablets at 2/3d. In drums of 1,000 tablets at 9/-. In commercial growers' drums of 10,000 tablets, price on application.

PLANTOIDS ROSE DRESSING

Here is another 'specialist' plant food in tablet form. Plantoids Rose Dressing is expressly designed to control growth and promote finer, more gloriously coloured blooms. Price 1/- and 3/6d.

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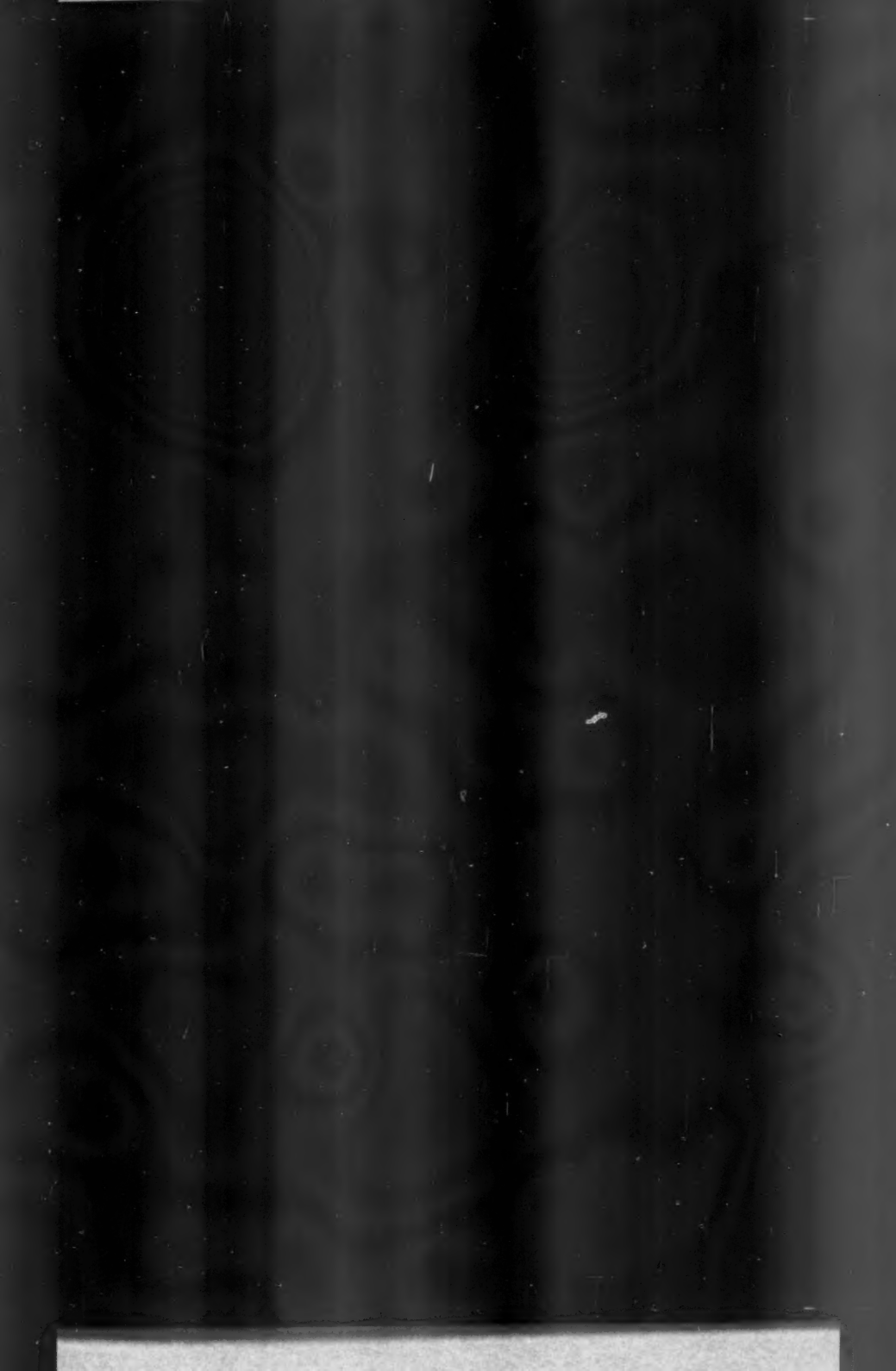
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